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THE FLORAL YEAR

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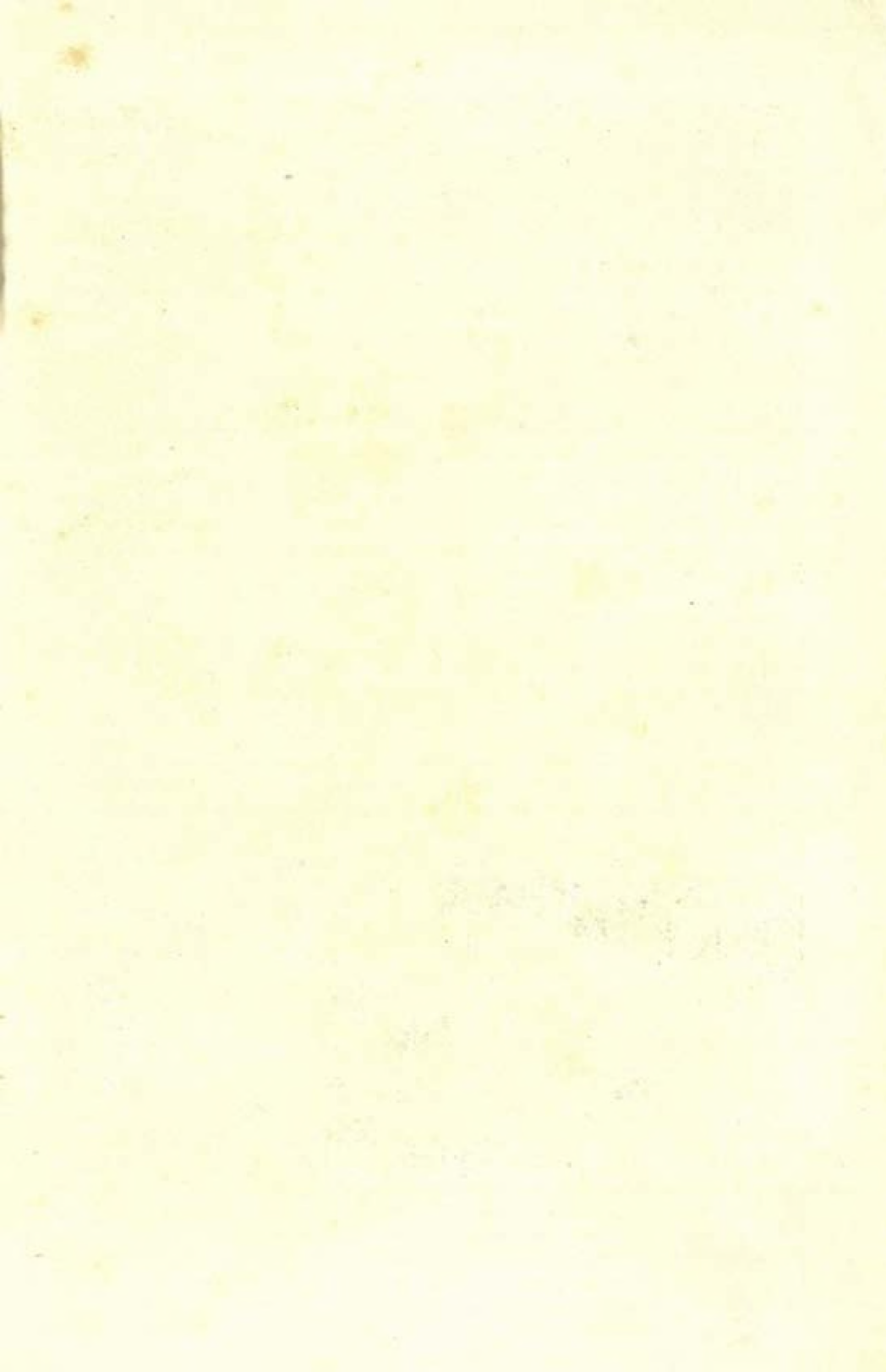
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WILD ROSE, GUELDER ROSE AND HONEYSUCKLE



THE FLORAL YEAR

19084

BY

L. J. F. BRIMBLE

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LONDON
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To
Three Friends

MISS ENID BLYTON

Children's Author

PROFESSOR WINIFRED CULLIS, C.B.E., M.A., D.Sc., LL.D.

Professor Emeritus in the University of London

MAJOR-GENERAL CYRIL LLOYD, C.B., C.B.E., T.D.

Director of Army Education

in recognition of their individual
and unique contributions
to education



PREFACE

Not books, but the light of nature, the experience of our own early years, the look which no person not blinded by reading can fail to see in a flower, is sufficient to reveal all this hidden wonderful knowledge about the first openings of the heart towards nature, during the remote infancy of the human race.—W. H. HUDSON

IN my two previous books, *Flowers in Britain* and *Trees in Britain*, the British flora was considered systematically according to families. In response to many requests, particularly from Mr. J. G. Wilson, C.B.E., this book has been written in order to reveal the flora according to season and environment. This is no easy matter, because so many variables are involved. For example, families do not conform to season; neither, in general, is any one family characteristic of any specific environment. Moreover, the flowering periods of plants differ considerably; some are a matter of a few weeks, others continue over several months. Then again, weather (an important conditioning factor in plant growth and flowering) is very variable; and this means that the flowering season of any species varies somewhat from year to year. And, of course, generally speaking, in the North of England and Scotland flowers and fruits appear one to several weeks later than those in the South. When deciding at what time of year to deal with any plant, each case is considered on its own merits. In most cases, the plants are described when they might reasonably be expected first to appear in bloom. At the ends of most of the chapters, lists are given, with page references, of plants which bloom during the same time and place but which have been dealt with elsewhere in the book.

Approaching the study of plant life in this manner renders it impossible to consider plant families systematically, for in almost any season of the year and in almost any environment entirely unrelated plants are discovered blooming side by side. But plant classification is important to the botanist and field naturalist, so many cross-references appear. Plants are often so affected by their environment that they are sometimes modified accordingly; and some plants are peculiar to a certain environment only. So here the flora is divided up according to environment, that is ecologically, at any rate during the more prolific flowering months.

Again, it was not easy to decide when to begin the floral year; it certainly does not start with a flourish with the New Year itself. Yet in spite of this it was finally decided to begin with the calendar year; but since so few blooms are available in January this month is devoted to the important study of the winter aspect of trees. From then onwards, month by month the flora is examined in relation to its surroundings.

THE FLORAL YEAR

But during the last four months of the year the flora is very subdued, and nothing, apart from a few well-known autumn-flowering plants, arrives anew. So this period, after the autumn-flowering plants have been considered, is devoted to seed-time and harvest, autumn tints and leaf-fall, and evergreens. Finally, bearing in mind that throughout the book the relationships between plants and man have been kept in the foreground, the book ends with the botany of Christmas customs and festivals.

Since no previous knowledge of botany is assumed, five preliminary chapters set out what is essential in order to understand flowering plants especially in relation to their environment (ecology) and to each other (classification).

There is scarcely any need to direct attention to the twenty-five coloured plates depicting plants from varying environments at different seasons. These beautiful works of art were specially painted for this book by Mr. W. Reeves. The photographs are the work of several well-known authorities who are not only specialist photographers but also themselves keen botanists. All the line drawings were prepared by myself from plant material gathered in various parts of the country.

Once more it is a pleasure to record my thanks to two friends and colleagues for much assistance. Mr. H. Cowdell helped in the choosing of the illustrations and the production of the blocks. Mr. H. Evans has not only been responsible for the production of the book, but also has read the entire manuscript. To him I am grateful for many suggestions. In dealing with the role of plants in lore and literature, many quotations are given; acknowledgements to the various authors and authorities are made separately.

L. J. F. BRIMBLE

London, 1948

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PART I

INTRODUCTORY

I long to see the flowers again,
The flowers whose names I scarce remember,
Stretching their pied and painted chain
From February to November.

Linking with perfume all the year,
With scent of nut and scent of honey,
Coltsfoot, Marjoram, Sweet-briar,
Charlock, Spurge and Agrimony.

Dropwort in the marshy lands,
Milkwort in the downland grass,
Crowfoot where the water stands,
Campion where the woodmen pass.

Silverweed and Tormentil,
And the white Daisy path that stretches
A milky way over the hill,
(Yellow in June with Horse-shoe Vetches);

Corydalis, Centaury,
John's-wort, Mullein, Feverfew,
Dove's-foot, Self-heal, Betony,
Viper's bugloss red and blue.

Spindle-berry in the sun,
Hawthorn's crimson and the ember
Of Bramble leaves when flowers are gone —
The flowers whose names I scarce remember.

Some of their Names: SYLVIA LYND

THE PLANT KINGDOM

How astonishingly does the chance of leaving the world impress a sense of its natural beauties upon me! Like poor Falstaff, though I do not 'babble' I think of green fields; I muse with the greatest affection on every flower I have known from my infancy — their shapes and colours are as new to me as if I had just created them with a superhuman fancy. It is because they are connected with the most thoughtless and the happiest moments of our lives. I have seen foreign flowers in hot-houses, of the most beautiful nature, but I do not care a straw for them. The single flowers of our Spring are what I want to see again.—JOHN KEATS.

ALL plants, from the lowest to the highest, the largest and the smallest, can be subdivided into two main groups, namely, those which bear seeds and those which do not. Among the latter are the most primitive of all plants, such as algae, bacteria and fungi, and then passing up through the scale of evolution there are also in the same group the mosses and



APPLE TREE IN BLOOM

Harold Bastie

INTRODUCTORY

liverworts, and finally ferns, horsetails and so forth. Now a seed is a product of some sort of flower, so it is clear that since the plants so far mentioned do not produce seeds, then neither do they bear flowers. They are, in fact, the non-flowering plants.

There are two main subdivisions of flowering plants : (1) those which bear their seeds completely enclosed in some form of case, that is, the Angiosperms ; (2) those which bear their seeds naked and exposed, that is, the Gymnosperms. The bulk of the latter is made up of the coniferous trees, such as spruces, pines, yews, etc. ; these will receive only slight and occasional consideration in this book. It is the Angiosperms which will concern us most, for these are the plants which present the many flowers familiar to us in Nature.



Flatters & Garnett

WILD STRAWBERRY

A herb

TYPES OF FLOWERING PLANTS

The normal flowering plant is composed of roots, stems, leaves and flowers ; but it is clear that these structures vary considerably in size, form, colour and so forth. Nevertheless, in spite of these differences, many plants have certain features in common, and for that reason they can be classified roughly according to vegetative structure, though such grouping does not conform to their scientific classification (Chapter 5).

Some plants grow to a great size ; they are the trees. The stem becomes thick and woody and forms the trunk which gives off branches of varying mass and form according to species.

At the other end of the scale, some plants vary considerably in height from a few inches to several feet, for example, buttercups, bluebells, primroses, foxgloves, strawberries, etc. These are called herbs, but are not necessarily of medicinal value. (It is unfortunate that herbalists use the same expression 'herb' having a much more specialised significance.) By far the majority of flowering plants are herbs and they certainly display considerable diversity in size and form.



Ernest G. Neal

WILD ROSE

A shrub

(ROSACEAE, p. 302). In fact, the flower (which is the main basis of flowering plant classification) of each of these three examples closely conforms to a common type.

Intermediate between the trees and the herbs are the shrubs. These are bushy plants with many branches and are woody. Unlike trees, however, they do not possess a trunk — that is, the main stem is not pronounced. So they never grow as high as the average tree. Examples of shrubs are privet, bramble, wild or dog rose and gorse.

It is important to note that the general vegetative habit of a plant — whether it be tree, shrub or herb — is of little account in scientific plant classification. This is exemplified by the illustrations chosen to portray the three types of plants described; the choice has been deliberate, for though one is a small herb (strawberry), the second a sturdy tree (apple) and the third a rambling bush (wild rose), they are all members of the same family — the rose family

LENGTH OF LIFE OF FLOWERING PLANTS

Many herbs carry out the whole of their life-history in one season. That is, they are born, develop and reproduce themselves, all within the space of a year, generally much less. Such plants are therefore called annuals. Wheat, barley and wild poppy are examples of annuals.

Other plants can complete their life-history so quickly that the offspring which they produce can also complete their life-history in the same season. Sometimes even three, or four, generations are produced within a single season. Such plants are said to be ephemeral. The groundsel is an ephemeral, and its quick growth and prolific reproduction make it an objectionable weed in the garden.

Certain plants take two years to complete their life-history. They

INTRODUCTORY

are the biennials. They develop vegetatively in the first year and produce seed in the second. Foxglove and beet are examples.

Many plants go on living year after year, sometimes producing seeds every season, and sometimes once in several seasons. Frequently they develop for several decades before they produce their first crop of seeds. The majority of trees and shrubs are of this nature, and they are said to be perennial. Some such plants have lived for centuries, though this is the exception. The biggest and possibly the oldest tree in the world is the cypress known as the Big Tree of Tule, still growing in Mexico. It has been estimated as being well over five thousand years old. Some yews are the veterans of Britain's flora.

EVERGREEN AND DECIDUOUS PLANTS

Perennials seldom maintain the same appearance throughout the year. The majority of British trees, for example, shed their leaves in the autumn (Chapter 59) and develop new ones in the following spring. They are said to be deciduous. Those plants which do not shed their leaves for the winter months are the evergreens; holly, many conifers, laurel and others are of this nature (Chapter 60). But it must be realised that although an evergreen bears leaves all the year round it does shed its leaves. It does so continuously, but never all at one time.

2

VEGETATIVE STRUCTURE OF PLANTS

THE organs of a typical flowering plant may be divided into two groups, — that which grows below the soil, the root, and the more diverse collection of organs above the soil called the shoot.

THE ROOT

The root of a normal flowering plant has two main functions to perform: (1) to anchor the plant firmly in the soil, and (2) to absorb water, mineral nutrients, etc., from the soil. Many roots carry out another function, that is, food storage for the plant. Thus plants differ from animals, for the former are quite stationary (apart from certain exceptions),



STRUCTURE OF ROSE-BAY WILLOWHERB

INTRODUCTORY

and are therefore entirely subject to their environment. They cannot move about, neither can they migrate, as animals can. Hence the plant's roots are of the utmost importance to it.

Fix'd like a plant on his peculiar spot,
To draw nutrition, propagate, and rot.

Essay on Man: POPE

In some root systems there is one main root, and from this branch roots are given off. These branch roots still further branch and so on. Such a system based on a single main root is called a tap-root system, and occurs in many plants such as the dandelion, wallflower, etc.

In other cases there is no main root, but a large number of roots of equal size. These then give off secondary roots in profusion. Such a root system is known as a fibrous root system. It is seen in grasses, cereal plants, etc.

Near, but not actually at, the tips of roots and their branches may be seen tufts of fine white root hairs. It is mainly through these root hairs that water and dissolved mineral nutrients are absorbed. Then the solution passes up in the form of sap from the root, through the stems and hence to the leaves and flowers and any other part of the plant where needed.

When a seed germinates, a single root grows out. This is called the radicle. In some cases this radicle persists and forms the main root of a tap-root system. On the other hand, in many plants, roots arise from other parts as well as from the original radicle. Roots which arise from any part of a plant except from the radicle are said to be adventitious. For example, in the case of most grasses and cereals roots arise from the bases of the stems either beneath or near the surface of the soil. It is these which produce the fibrous root system. Some creeping plants bear adventitious roots high up on their stems. This is seen in the case of climbing ivy (p. 590). Then again, some plants, such as begonias, sometimes produce adventitious roots on the edges of their leaves where they touch the soil. Cut ends of stems of many plants, such as carnations, geraniums, pelargoniums, willows and so forth, will, if placed in the soil, sometimes give off adventitious roots. That is one way of producing new plants vegetatively.

THE SHOOT

The shoot is composed of stems which bear leaves and flowers. A typical shoot is made up of a central main stem which terminates in a bud. If this so-called terminal bud is only a leaf-bud it is capable of opening out and not only producing new leaves but also continuing the growth of the main stem. If, however, the terminal bud contains a young flower or collection of young flowers, then, after it has burst open and expanded its flowers, growth in that direction ceases.

THE FLORAL YEAR

On the sides of the stem, leaves are borne. On the other hand, many plants bear all their leaves from the ground-level. Such leaves are said to be radicle leaves. Then again there may be a mixture of the two.

That region of a stem which bears a leaf or leaves is called a node, and that part of the stem between two adjacent nodes is an internode. The angle formed by the leaf and the stem which bears it is called the axil, and in the axil a lateral or axillary bud is usually formed.

Buds are young, undeveloped shoots. If they are leaf-buds only, they finally grow out to produce either leaves or branch stems bearing more leaves. If, on the other hand, they are flower-buds, then they finally produce flowers (and possibly leaves) and their growth ceases. Axillary buds often do produce branch stems, of course, but not all axillary buds develop. If they did, then the average tree would soon become a tangled mass. Those buds which do not normally develop are said to be dormant. In exceptional circumstances, however, dormant buds will awaken and actively produce branches. This often happens if the terminal bud has been severed. Frequently, for example, the gardener nips off terminal buds of sweet peas, chrysanthemums and runner beans. This not only prevents further growth in length, but also enables some axillary buds to develop more quickly and stimulate dormant buds to active growth.

Sometimes buds will arise adventitiously. This happens in the case of tillering; that is, when branch shoots arise at the base of a tree trunk (especially if the trunk itself has been damaged), and in the well-known rural practices of pollarding and coppicing trees.

The stem of a plant is usually circular in cross-section; sometimes, however, it is square as in the white deadnettle, and frequently slightly or markedly ridged, as in the pumpkin.

GROWTH IN THICKNESS

The stems and roots of many plants, especially perennials, grow in thickness as well as in length, after the initial first season's growth. This is called secondary thickening and results in the thickening of roots, trunks and branches of trees.

In those plants which grow in thickness, a new layer of wood is laid down every year around the already existing cylinder of wood. The wood of plants is composed mainly of pipe-like elements which conduct water, etc. But the elements which develop at the beginning of the growing season (spring) are larger than those which develop towards the end of the growing season (autumn). Growth ceases during the winter, so when the following season's growth begins, large elements are laid down alongside the smaller elements of the previous autumn. In a cross-section of a trunk or woody branch this effect is seen in the form of concentric annual rings. It is therefore possible to tell the age of the organ by counting the annual rings.

INTRODUCTORY

Surrounding the woody cylinder of the plant, which is used for conducting water, etc., upwards, are two, more or less distinct, layers. That nearest the wood is composed of elements used for conducting manufactured foods in solution downwards. This tissue is called bast or phloem. Outside the layer of phloem, that is, on the outside of the trunk or branch, is another layer which forms the bark. This varies in thickness and texture according to the species. Not so easily seen with the naked eye in most species is another layer between the phloem and the bark. This is the cork; and since cork is impervious to water, the bark outside cannot get any supply of the latter from the wood, so the bark is really dead tissue, although it has a valuable protective function.

THE TWIG IN WINTER

The examination of a twig in winter reveals other interesting characters of a perennial plant. The twig is covered by a very thin layer of bark. On it may be seen the scars of the leaves which have been shed during previous seasons. They are usually either crescent- or horseshoe-shaped, and sometimes on them may be discerned even the small pin-point scars of the veins which passed up through the leaf-stalks.

Winter buds, too, should be examined, for they are frequently diagnostic of the species. Some are described in Part II. The large bud of the horse-chestnut, for example, is covered with a glutinous material as a protection against excessive moisture penetrating to the tender tissues beneath. The outermost bud-scales are boat-shaped and are used for protecting the delicate leaves inside. If all the bud-scales be dissected from such a bud, it will be seen that there is no real distinction between bud-scales and foliage leaves, for one gradually merges into the other. It must be borne in mind, however, that not all winter buds are so elaborate as those of the horse-chestnut. A few, such as those of the wayfaring tree, have no protective bud-scales at all.

Bud-scales also leave scars after they have fallen. These are called scale-scars, and those which have been left by the bud-scales of a terminal bud collectively form a ring around the stem. At the end of the next year, another such series of scale-scars is left by that year's terminal bud, so the distance between two consecutive sets of rings is the distance which that twig has grown in length during the one growing season.

On most twigs small marks, varying in size from that of a pin's point to that of a pin's head, will be seen scattered unevenly. These are the lenticels. Each lenticel is usually lighter in colour than the bark around it. It is composed of loosely fitting, microscopically small, cork particles which render the area of the lenticel porous. Lenticels are passages for gaseous interchange, though they are not the most important ones (p. 10).

THE FLORAL YEAR

THE LEAF

Leaves vary in size and shape. Some leaves are simple in that they are composed of one blade only, though this varies considerably in size and form. Other leaves are compound in that they are made up of several blades or leaflets.

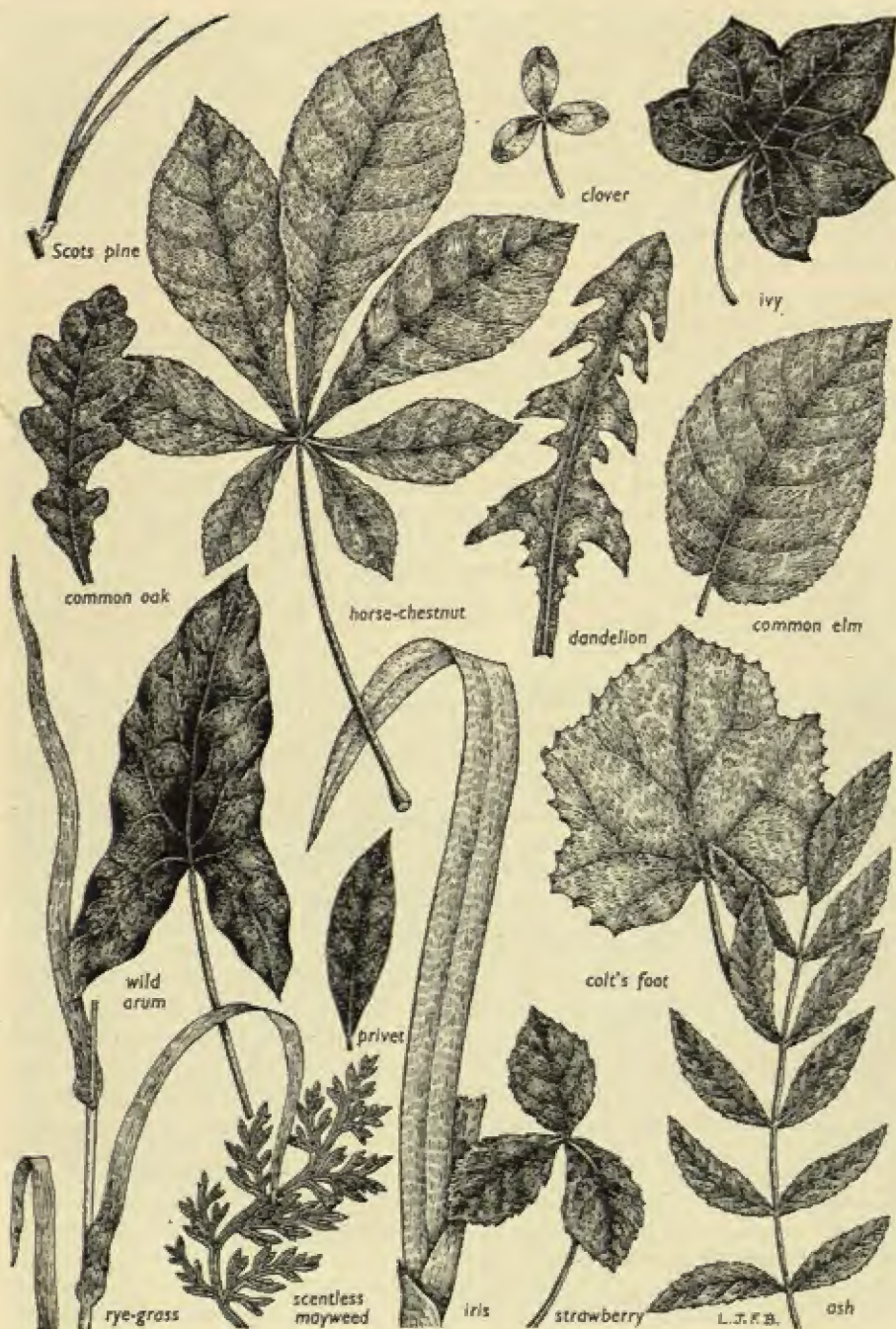
Mr. Ruskin, in one of his most exquisite passages, has told us that "Flowers seem intended for the solace of ordinary humanity: children love them; tender, contented, ordinary people love them. They are the cottager's treasure; and in the crowded town mark, as with a little broken fragment of rainbow, the windows of the workers in whose heart rests the covenant of peace." I should be ungrateful indeed did I not fully feel the force of this truth; but it will be admitted that the beauty of our woods and fields is due at least as much to foliage as to flowers.—*Flowers, Fruits and Leaves*: SIR JOHN LUBBOCK (LORD AVEBURY)

A typical leaf is composed of a flattened, green expansion called the leaf-blade or lamina. The lamina is usually joined to the stem by means of a leaf-stalk or petiole which varies in length and thickness. That part of the petiole joining the node of the stem is called the leaf-base, and it is sometimes thickened considerably, as is the case in the walnut and the horse-chestnut. On the other hand, the leaf-base may be extended into a long sheath which surrounds the stem which bears the leaf, as is the case in the buttercup. Some leaves have no leaf-stalk, but the blade is inserted directly on the node. Such leaves are said to be sessile.

At the point of insertion of the leaf on the stem may often be seen two greenish outgrowths. These are called stipules, and in some examples, such as the garden pea, they assume large dimensions. But many species of plants have no stipules at all.

It is in the leaf-blade that leaves show their greatest diversity of form. In the leaf-blade, the veins are usually prominent. These are channels conducting water to, and manufactured foods from, the leaf. They contain wood and phloem elements which are connected with the wood and phloem of the stem (for there is a certain amount of wood and phloem even in unthickened stems). Often there is one main vein which gives off branch veins, which branch still further, and so on, giving a net or reticulate venation. In other cases, especially the blade-like leaves of grasses, lilies, irises, etc., there is no outstanding main vein, but a number of veins of equal size running parallel to each other, thus giving a parallel venation.

The leaf is a very important organ, for in every green plant it is the main food factory. Plants are static; they cannot move about as most animals do searching for food, so they must make their own. This food-making is the function of the green leaf. The raw materials which pass into the food factory are water and dissolved mineral substances drawn up from the soil, and carbon-dioxide gas absorbed from the atmosphere.



DIFFERENT LEAF FORMS

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Then, with the chemical aid of the green colouring matter called chlorophyll, and also the agency of sunlight, food such as carbohydrates, proteins and fats are manufactured and eventually passed out of the leaf to all parts of the plant where they are needed (p. 582). The carbon dioxide passes into the leaf through microscopically small pores known as stomata (*sing.* stoma). These are present mainly on the under-surface of the normal horizontally or obliquely growing leaf; on the upper-surface of a floating leaf such as that of the water lily; and evenly on both sides in the case of upright leaves such as those of the iris. It is also through the stomata that plants respire.

MODIFIED PLANT ORGANS

Sometimes a plant organ has a special function to perform, and then it accordingly becomes modified in form.

There are several well-known forms of root modifications. Most roots, for example, store food: but in certain cases the roots are modified in order to store a particularly large supply. So they become very swollen and form what are called root tubers. Such tubers are always adventitious in origin. Root tubers are very prominent in the dahlia and the lesser celandine. At the top of each root tuber is a bud which in the spring



E.N.A.

A BANYAN TREE IN CAIRO

INTRODUCTORY



E.N.A.

GIANT CACTI GROWING IN THE DESERT NEAR TUCSON, ARIZONA

sprouts to produce a new plant. Tap roots sometimes also swell to form food stores; this is very evident in the carrot.

Another type of modified root is seen in the aerial roots of the banyan tree. This tree is not to be seen in Britain, but it is a common sight in tropical and sub-tropical parts of the world. The roots are given off from aerial branches, finally reach the soil and there become established, grow in thickness, and then act as further supports for the spreading

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branches of the tree as well as an extra means of absorbing water, etc., from the soil.

Certain orchids and other plants native to tropical and sub-tropical forests grow on the trunks and the branches of trees. They are called epiphytes (p. 40). These epiphytic orchids obtain some water, etc., from the decaying dead leaves which accumulate around them, but they also give off roots which hang in mid-air. These also are aerial roots, and though they never reach the soil they are so constructed that they can absorb water which becomes condensed on them from the surrounding humid atmosphere.

Stem modifications are many and varied. For example, the stems of cactus plants which normally grow in arid deserts are very thick and fleshy. They are therefore able to store water against adverse dry conditions. Such fleshy stems are also green, so they must contain chlorophyll and are thus able to manufacture food. So the leaves are not required as food factories and are modified to form sharp spines as a protection against browsing animals (p. 13).

The stem of a normal terrestrial plant grows more or less upright, thus holding up its leaves and flowers to the best advantage so far as air and light are concerned. Some main stems, however, creep along the surface of the soil giving off adventitious roots at intervals. These are called creeping stems; a good example of such is creeping Jenny or moneywort.

In other cases it is not the main stem but the branch stems which creep and give off adventitious roots, usually at the nodes. These are called runners, and are well exemplified by those of the strawberry. The axillary



Ernest G. Neal

CREeping JENNY

Note the adventitious roots

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bud at a node which touches the surface of the soil develops to form a new shoot. Adventitious roots are given off, and thus a new plant is established.

In the potato the creeping branch stems are beneath the surface, and the ends of such stems swell to form the well-known edible portion known as a stem tuber. This stem tuber stores food in the form of starch, and the so-called 'eyes' of the tuber are really lateral buds in the axils of leaves which have become reduced to insignificant scales.

Some stems, though not always swollen, grow along beneath the soil, and as they grow adventitious roots are given off at intervals along their length. At some nodes shoots are given off which grow up into the air and produce stems, leaves and flowers. Thus new plants are formed. Such underground stems are called rhizomes; a good example is the couch grass, as the gardener knows all too well, for once the new plant has become established it does not matter whether the rhizome becomes severed or not. The iris and Solomon's seal possess rhizomes which are swollen throughout their length and store food.

Closely related to runners are stolons. These are normally growing branches which are not procumbent like those of the strawberry, but, owing to their considerable length, bend over and eventually touch the soil. Where a node is thus brought into contact with the surface of the soil, adventitious roots are given off and the axillary bud at that node grows out to produce a new shoot. Adventitious roots also emerge, and thus a new plant is established. Stolons are produced by the blackberry, currant and gooseberry.

Sometimes stem branches are arrested in their growth. In place of the usual terminal bud at the end of the branch, the stem forms a sharp thorn. This is evident in the case of hawthorn, and it is easy to prove that the thorn is really a branch stem since it arises from a bud in the axil of a leaf, and sometimes even the thorn itself is divided into one or two internodes towards its base, bearing foliage leaves at the nodes.

Hooks differ from thorns in that, instead of being modified complete stems like the latter, they are formed by the modification of the outer tissues only. These hooks are used for climbing, as in the case of the rose, especially the rambler and wild rose, the blackberry, raspberry, etc. Hooks may appear on any part of the stem, on the node, internode and even on the petiole and the backs of the larger veins of the leaf.

Stems may become flattened. Sometimes they become so flattened and green that they resemble leaves and actually carry out the function of leaves. The butcher's broom is a case in point. There are several means of proving that these leaf-like structures are really stems. For example, rarely do true leaves produce buds and flowers on themselves. Yet on the flattened green structure of the butcher's broom, a small bud can be seen about half-way up the mid-rib, in the axil of a small scale-leaf. Later this bud opens out into a white flower. Also these flattened stems arise, as they should do (since they are branch stems) in the axils of

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R. A. Malby

SECTION THROUGH A LILY BULB

leaves; but here the true leaves are reduced to small scales. Thus these structures, in spite of their leaf-like structure and function, are stems. They are called phyllodes.

Many plants have long straggling stems which must have some means of support. Their support in Nature is usually some other sturdier plant. Certain of these climbing plants, such as the ivy, give off adventitious roots at intervals along the climbing stem. These roots cling to the support. Other climbing stems twine around their support in a spiral fashion. In the runner bean, convolvulus and gourd, the stem twines in an anti-clockwise direction, whereas in the honeysuckle, hops and black bryony it is clockwise.

The stems of the crocus and gladiolus become modified to store food. Whereas in the potato the tuber is a swollen branch

stem, that part of the crocus which swells is the main stem. It is called a corm (p. 135).

The bulb of the onion, lily, tulip, snowdrop, bluebell, etc., is really a modified underground shoot — that is, it has modified stems and leaves. The function of the bulb is similar to that of the tuber and the corm — food storage. The stem is flattened and bun-shaped — very unlike that of the corm. But most of the leaves are fleshy though colourless, and they store the food. They make up the bulk of the bulb. But the outermost leaves are usually thin and scaly, and are used for the protection of the more fleshy leaves inside. At the centre of the upper surface of the stem, a terminal bud is produced, and some lateral buds in the axils of the fleshy leaves may also be seen. Bulbs and corms may be looked upon as a means of the plant resting during the season which is unfavourable for that plant's growth. Resting in this form and preparing for the next season's growth is known as perennation.

Leaves are sometimes reduced to sharp spines and thus form a means of protection against browsing animals. Only a part of the leaf may be modified as in the case of the holly leaf. But in some plants the whole leaf becomes modified into a spine as in cacti and gorse.

Some climbing plants use leaves for the purpose. To this end the leaves are sometimes modified completely or partially into fine threads, known as leaf-tendrils, which twist round the support. Such tendrils are seen in the pea, and here, since the majority of leaflets are modified into

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such tendrils, the stipules become enlarged to carry out the normal function of the leaf. Certain tendrils, such as those of the Virginian creeper, are modified branch stems; they are therefore stem-tendrils. Those of the Virginian creeper itself have adhesive disks at their tips.

Even the protective scales of a bud may be looked upon as modified leaves.

3

FLOWERS AND FRUITS

UNTIL comparatively recently it was believed that living things arose from dead material and sometimes even inorganic matter. The phenomenon was called spontaneous generation, and was initially propounded by Aristotle in the fourth century B.C. It was believed that rain storms brought living frogs to the earth. Barnacles were supposed to be formed from the rocks on which they lived. Later on, these were believed to turn into birds. Only a few centuries ago people thought that mammals such as dogs and horses arose alive from dead material.

REPRODUCTION

Gradually belief in spontaneous generation died out; yet it was not until 1864 that the great Louis Pasteur proved beyond all doubt that it was impossible for anything to be generated alive spontaneously. Now we know that new living things arise from already existing living things; that probably nothing arises *de novo*. This process of begetting new life is called reproduction, and there are several ways in which it may be effected. These may be divided into two main groups, namely: sexual reproduction which involves two special cells the fusion of which results in the formation of a new organism; and asexual reproduction in which there is no question of sex being involved — that is, there is no fusion between cells, though frequently special cells are involved.

Asexual reproduction may be effected by a single special cell or, on the other hand, an entire tissue of cells may be used in the process. There are many varieties of this method of reproduction, though they are mainly confined to the non-flowering plants.

VEGETATIVE REPRODUCTION

Vegetative reproduction is somewhat similar to asexual reproduction in that no sexual process is involved. In spite of its name, it occurs in

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both plant and animal kingdoms. The process involves the production of new organisms from certain tissues of the original organism.

Among plants vegetative reproduction is common from the highest flowering plants to the lowest non-flowering plants. The Canadian water weed (p. 514), a common water weed, frequently develops and reproduces itself by merely breaking into smaller portions, each of which is capable of growing into a complete new plant. The plant is actually indigenous to North America, but was mysteriously introduced into Ireland in 1836 and then into England in 1841. Today it is a very common plant (frequently a weed) throughout these islands — all because of its prolific means of vegetative reproduction.

Several of the modified plant organs described in Chapter 2 are also used for vegetative reproduction. The potato tuber is a case in point. The old plant dies down at the end of the season, but the tubers remain in the soil alive though dormant (unless gathered by man for his sustenance), and then in the spring they sprout to produce new plants. Corms, rhizomes, creeping stems and runners are all means of vegetative reproduction, as the gardener knows to his annoyance when trying to get rid of such weeds as dandelions and couch grass. Many of these organs, however, are utilised in agriculture and horticulture for producing new plants, for example, potato tubers, bulbs, corms, rhizomes of rhubarb and so forth.

Cuttings of pelargoniums, chrysanthemums, carnations and a host of other plants of economic or ornamental value are also vegetative means of reproduction. Here advantage is taken of such a plant's tendency to produce adventitious roots.

Grafting and budding are more artificial means of vegetative reproduction.

SEXUAL REPRODUCTION

Sexual reproduction is fundamentally the same in all plants and animals (including man) wherever it occurs. It is common to plants and animals from the lowest to the highest.

In all forms of sex, two cells, called germ-cells or gametes, are involved. In some of the lower plants and animals it is impossible to distinguish between the two gametes. But in most other cases there is a differentiation into the male gamete or sperm and the female gamete or egg.

Before a new organism can be produced, the sperm must fuse with the egg. The resulting cell is called a zygote. This zygote is then capable of cell division to produce a new organism akin to the parents from which the gametes arose.

In some organisms the eggs are produced by one organism and the sperms by another. The whole of the former organism is therefore female whereas the whole of the latter is male. Such organisms are said to be unisexual. All the higher animals are unisexual. Some of the lower animals, on the other hand, are hermaphrodite in that each pro-

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duces both eggs and sperms. The earthworm is a case in point. (The term hermaphrodite is derived from *Hermaphroditus*, the being in Greek mythology who was partly female and partly male.)

Plants are the reverse in that only the minority of the higher plants are unisexual. Hermaphrodite flowers are in the majority. Nevertheless there are unisexual flowers. Such flowers can be segregated into two groups, for in some cases both male and female flowers grow on the same plant, whereas in other cases male flowers grow on one plant and female on another.

When the sperm fuses with the egg it fertilises it. An unfertilised egg cannot develop to produce new plants except in a few very rare cases.

The sexual reproductive organs of the flowering plant are in the flower itself.

THE INFLORESCENCE

Flowers may be borne on the plant entirely separated from each other. These are said to be solitary. On the other hand, they may be borne together in clusters. Such a cluster of flowers is called an inflorescence, and there are several types of these, for example, sweet pea, bluebell, cherry, parsley, dandelion, etc.

THE FLOWER

A simple example of a hermaphrodite flower is that of the common buttercup. Each flower is borne on a stalk the end of which swells slightly to form what is called the receptacle. Then passing from the outside to the centre of the receptacle there are four sets of floral organs. Each set is arranged in definite whorls.

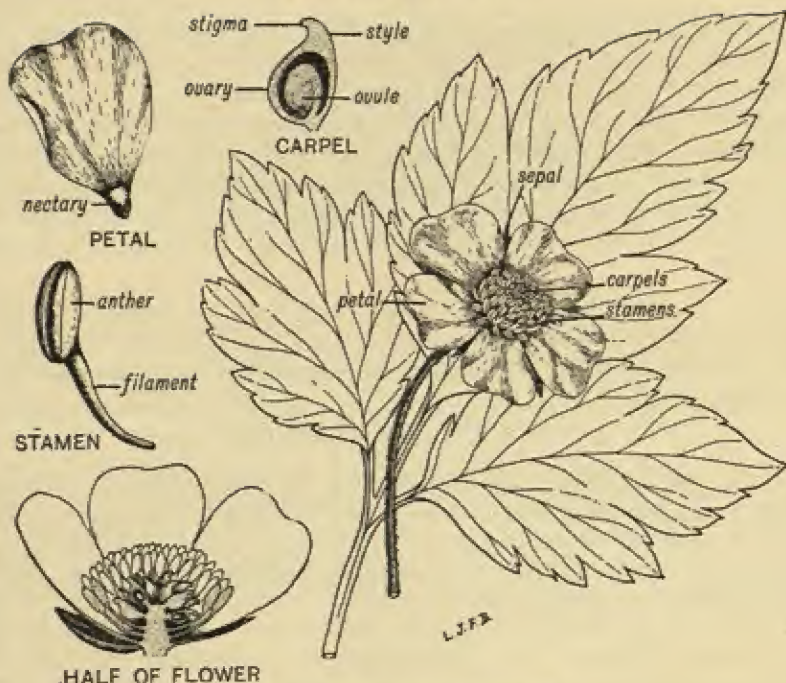
The outermost whorl is composed of usually five pale-green, boat-shaped sepals. Collectively these form what is called the calyx. The function of the calyx is not important for the sepals have nothing to do with the actual sexual reproductive process. They merely protect the inner floral organs while the flower is in bud, and then sometimes support the same organs when the flower is open. In many flowers, however, for example the poppy, the sepals fall off when the bud has fully opened.

Passing inwards the next floral whorl is the corolla composed of usually five yellow, heart-shaped petals. At the base of each petal is a small sac containing nectar; insects visit the buttercup flower to extract the nectar from these nectaries, and from it they make honey.

Next in order come several whorls of organs, shaped like Indian clubs and yellow in colour. They are the stamens. The number in the buttercup is indefinite and large; but in many other flowers it is constant for the species.

The innermost whorl of floral organs is made up of an indefinitely large number of so-called carpels, each of which is somewhat ovoid in shape with a hook at its tip.

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THE BUTTERCUP FLOWER

The stamens and the carpels are the most important parts of any flower, for it is they which constitute those organs which are responsible for producing the male and female gametes respectively. Since therefore the buttercup flower produces both stamens and carpels it is clearly hermaphrodite, whereas among unisexual flowers the males bear stamens only, and the females carpels only.

Each stamen is composed of a stalk or filament which bears a swollen head called the anther. Running throughout the length of the anther are four cavities or pollen sacs, so-called because they contain the pollen which, when ripe, takes the form of small, spherical pollen grains. The male gametes are produced by these pollen grains.

The hooked part of the carpel is the style at the tip of which is the sticky stigma. The main part of the carpel (called the ovary), however, encloses a cavity in which is a more or less spherical organ joined to the base of the cavity by a short stalk. This organ is the ovule, and inside it is the egg.

The next main stage in sexual reproduction of the flowering plant is the fusion of the male gamete with the female gamete; but it is obvious that this cannot occur while one gamete is still enclosed in the pollen grain and the other is imprisoned in the ovule. So before fusion is possible, certain mechanical processes are essential to bring the two gametes into contact with each other.

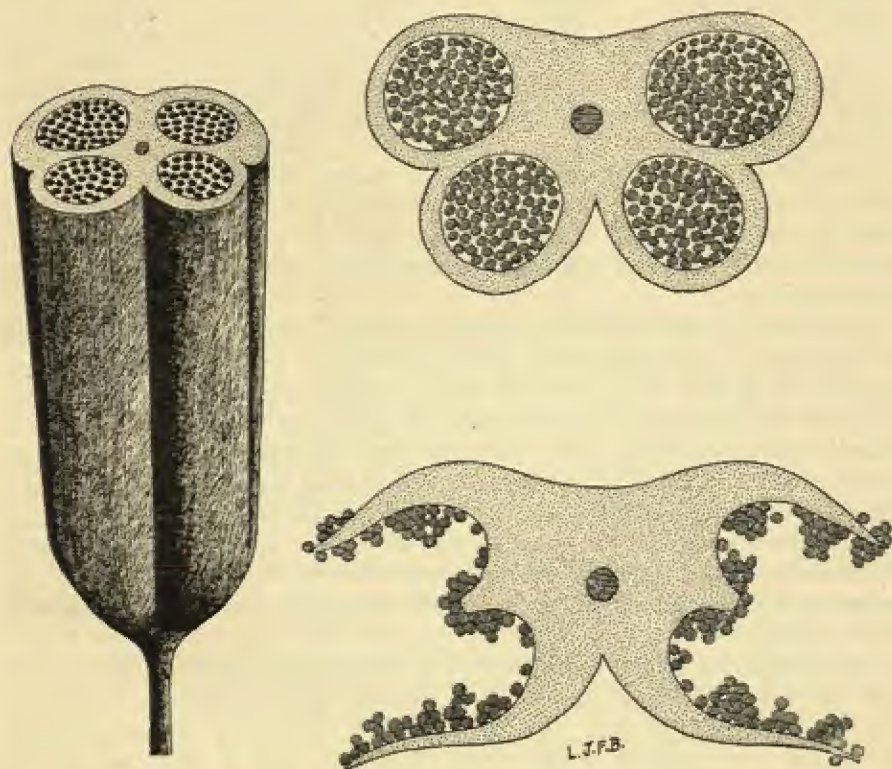
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The first mechanical stage involves bringing the pollen grain into contact with the carpel which encloses the ovule. This process is pollination, and there are many varieties of the process in which sometimes the petals and sometimes the sepals assist. To this end, flowers take on a host of different forms, shapes, colours and scents. So before considering pollination itself, it would be useful to examine a representative few of the diversities of floral structure.

SEPALS

The calyx, which is the collection of sepals, does not show considerable diversity except in number, for, as has already been mentioned, in most cases its function is normally the protection of the flower while still in bud, and there is no connexion between it and pollination.

Sepals do, however, vary considerably in number and shape. In the rose, for example, there are five of them and they are long and sometimes



STRUCTURE OF STAMEN

Left, anther head cut in half; *top right*, transverse section of nearly ripe anther showing pollen grains; *bottom right*, section of anther splitting to release ripe pollen

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even of leafy form, whereas in the poppy there are only two which are simple, boat-shaped and very hairy. The lesser celandine usually has three simple sepals, the wallflower four, the campion five, and so forth.

Sometimes the sepals are joined to form a tube. This is well exemplified by the primrose. In other cases, such as the marsh marigold, the sepals actually perform the function of the petals. They are thus petaloid — brightly coloured (golden yellow) in this case — and frequently large and conspicuous. When the flower has petaloid sepals, the petals themselves are in some cases modified to perform some other function. For example, in the Christmas rose, or black hellebore, the sepals are large, white and petaloid, and the petals are reduced to small, tubular nectaries.

Sepals, also, sometimes become highly modified to perform some even more special function. In the dandelion, for example, the sepals take the form of a collection of white hairs called a pappus. This functions eventually as a parachute for the distribution of the dandelion fruit.

PETALS

The flower's petals show considerable diversity of number, form, colour, size, arrangement, and so forth, though such characters are usually constant for the species.

Some insignificant flowers, such as those of the willow, have no petals at all, for these flowers are wind-pollinated so there is no need for them to attract insects. But in certain cases the petals take on unusual functions and become modified accordingly, as in the case of the Christmas rose.

In a very large number of flowers, all the petals are free. This is exemplified by the buttercup and wallflower; but in an even larger number of flowers the petals are united either partially or completely. Those of the primrose, for example, are united at their bases to form a long cylindrical corolla tube enclosed in the calyx tube. The five petals of the gentian are united to form a bell-shaped corolla, which is quite regular in shape; whereas the five petals of the white deadnettle form a very irregular corolla constructed so as to aid insect-pollination. Then the five petals of the dandelion are even more curious; they are united along the whole of their length, not in the form of a tube, but like a strap.

Some flowers present an entirely regular form, whereas others are very irregular. This is well seen by comparing a wallflower with that of a sweet or garden pea. The wallflower has four free sepals and four free petals arranged in a cruciform fashion. Thus a plan of such a flower could be cut into halves (one of which would be the image of the other) by any plane which passes vertically through the centre of the flower. This is not so in the case of the pea flower. Here

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PRIMROSE



MARSH MARIGOLD



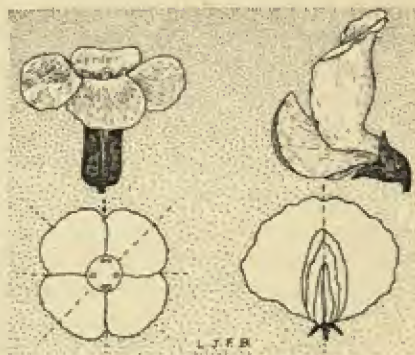
SMALL GENTIAN



DANDELION



WHITE DEADNETTLE



WALLFLOWER AND PEA
(regular and irregular)

TYPES OF FLORAL FORM

there are five petals, two pairs similar to each other but different from the rest, and the fifth entirely different from any of the others. The uppermost petal is the large, odd standard. On each side are two smaller, rather irregularly shaped wings, and at the bottom two elongated petals collectively forming the keel. It is clear that only one plane — that passing through the midrib of the standard, the centre of the flower and between the two wing petals and two keel petals — will divide the flower equally.

There are many other forms of irregular flower, such as that of the deadnettle, violet.

In some kinds of flower it is not possible to tell, even after a close examination, which are petals and which are sepals. Often it may be argued from the arrangement of the whorls that some are sepals whereas others are petals, though both are similar in colour, size and form; but this is not always possible. Then again, it is not always possible to say whether all the organs are sepals and that the petals have become suppressed during evolution, or vice versa. Only a careful research into the origin of these organs on the receptacle can reveal the

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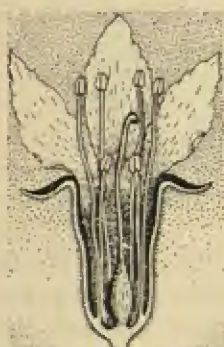
true identity of such organs, and in many cases such research has yet to be carried out. Even specialist botanists are not always agreed on these points. Anyhow, there is no need to be dogmatic where there is doubt, at any rate, in nomenclature; so usually where it is not possible easily to distinguish between sepals and petals the two sets of organs are grouped together and known as the perianth. This is the case in such familiar flowers as the bluebell, tulip, crocus, etc.

STAMENS

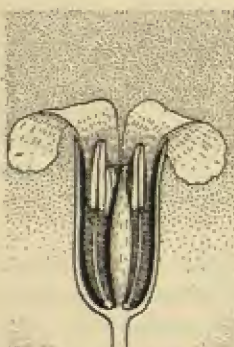
Stamens vary considerably in number, though where there are only a few they are usually constant for the species. On the other hand, the number is high and indefinite in very open flowers.

In some flowers the filaments of the stamens of the same flower vary in length. In the purple loosestrife there are six short and six long stamens; in the wallflower there are two short and four long stamens; and in the white deadnettle one pair is long and the other pair short.

Then the point of insertion of stamens varies. Those of the poppy, buttercup, wild rose, daffodil, and a host of others are inserted on the



PURPLE LOOSESTRIFE



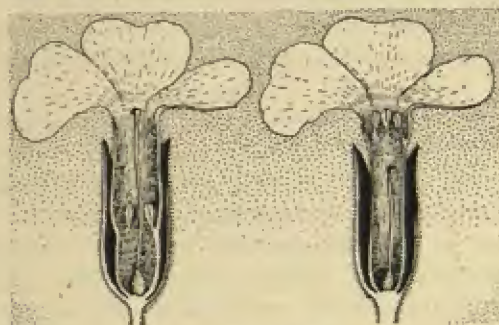
WALLFLOWER



WHITE DEADNETTLE



BLUEBELL



PRIMROSE



BIRD'S-FOOT TREFOIL

DIVERSITY IN ARRANGEMENT OF STAMENS

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receptacle itself. * Those of the bluebell are joined on to the perianth segments (one on each segment), though three are inserted high up and (alternating with these) three very near the base of the perianth segment. In the case of the primrose, the five stamens are inserted on the inside of the corolla tube, but in some flowers (thrum-eyed) they are all inserted near the top of the tube, whereas in other flowers (pin-eyed) they are inserted well down the tube (p. 109).

Sometimes the stamens are united with each other. This is well exemplified in the dandelion where the five stamens are fused along their entire length to form a tube surrounding the style of the ovary. The pea family is curious in this respect. There are ten stamens. In some examples, however, such as gorse and broom, all ten stamens are united by their filaments for about two-thirds of their length; in other cases, however, such as the bird's-foot trefoil, nine are united in this way, but the tenth (the uppermost one) is free along its entire length.

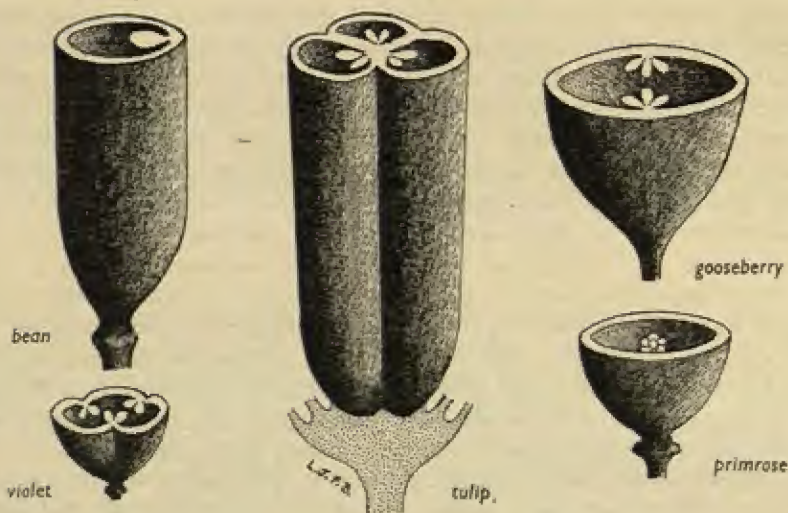
Diversity in form and point of insertion in the case of stamens is quite purposive. There are many other examples, of course, some of which will be dealt with when the flower in question is being studied. Then it will be seen that two of the main results of such special organisation may be: (1) a distinct aid to insect-pollination or (2) a very workable mechanism which prevents self-pollination. (For many reasons, even in hermaphrodite flowers, it is desirable that they should be cross-pollinated and not self-pollinated; though self-pollination is often resorted to when cross-pollination has not been, or cannot be, effected.)

CARPELS

The collection of carpels shows many interesting forms. One of the simplest is that of the buttercup where all the carpels are separate and free. Their number, too, is high and indefinite. In many flowers, on the other hand, the number of carpels is small and definite and frequently they are fused together.

The methods of fusing of carpels are interesting but rather complicated. The best way to examine the various types would be first of all to imagine the carpel as an open leaf, bearing its ovules on its margins. It must be realised, however, that this is purely a hypothetical case, for no such angiospermic flower exists which bears its ovules thus exposed. In every case among the Angiosperms the ovules are enclosed in some form of container (the ovary). Imagine, therefore, our hypothetical carpel changing its form in order to enclose the ovules. The simplest method would be for it to fold in half along the midrib. The two margins would meet and fuse with the ovules tucked inside. Thus we should get a single carpel enclosing a longitudinal line of ovules. This is just what we do get in certain cases such as the pea family. But in such a case, there will be either only one carpel to each flower (as there is in the

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TYPES OF OVARIES

Each cut across, showing the lower half

case of the pea, bean, gorse, etc.) or there may be several or many, though each one separate.

The next method of enclosure would be two carpels facing each other and fusing at their margins, thus giving a common ovary into which would project two longitudinal rows of ovules. This is so in the gooseberry. The tomato is a variation of this in that the two pairs of carpellary margins fuse together at the centre. Thus the ovary has two chambers with a row of carpels projecting into each chamber from a common vertical centre. Sometimes in the same plant there are three fused carpels giving three chambers to the ovary. The violet, on the other hand, is more like the gooseberry except that here there are three carpels, but the margins fuse at the periphery, not at the centre, so there is one chamber with three longitudinal rows of ovules.

The lily family is a splendid example of the fusion of three carpels at a common centre. This is well seen in the tulip.

The primrose presents a very complicated type. Here there are five carpels joined together, but the ovules do not project from five longitudinal rows at the periphery, but are borne on a central projection which grows up from the base into the common ovary chamber.

The floral receptacle, too, varies considerably in size and form.

POLLINATION

Before sexual fusion of the male and female gametes can occur, it is necessary that the pollen be brought into contact with the carpel. During

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this preliminary process of pollination, the pollen is shed from the anther-head which has split and it is then transported by one of several means to the stigma of the carpel where it adheres, for the surface of the stigma is sticky. The transference of pollen from the stamen of a flower to the stigma of the same flower is self-pollination. On the other hand, pollination of one flower with pollen from that of another flower is cross-pollination.

In self-pollination, the pollen usually falls on to the stigma of the same flower. Although, as has already been stated, cross-pollination is more desirable than self-pollination and plants often adopt methods for preventing the latter, if by some chance cross-pollination does not occur, certain flowers then resort to self-pollination; indeed some flowers even adopt devices to facilitate this.

Plants adopt some very wonderful methods of ensuring cross-pollination. These will be considered mainly when the examples are being studied during their flowering season.

The simplest method of cross-pollination is by wind. This is common among unisexual flowers such as many of our trees. Most flowers of grasses are also wind-pollinated. These flowers have no need to attract insects so they are usually inconspicuous, completely lacking in striking colours, perfume or nectar. When the pollen is ripe it is exposed on the anthers which have split open and is then blown about by the wind. Naturally the chances of pollen grains touching the stigmas are very remote, so much more pollen is produced than actually effects fertilisation. Wind-pollination is therefore a very wasteful method.

Insect-pollination is a much more efficient method and certainly less wasteful. Bees, wasps, butterflies, moths, flies and beetles are the chief agents. These animals visit the flowers for the nectar they offer. During their visit the insects collect pollen on their hairy legs and bodies. Then as an insect passes from one flower to another the pollen collected from the first is rubbed on to the stigma of the next.

The simplest method of insect-pollination is seen in open flowers such as wild rose and buttercup, where the insect merely crawls over the centre of the flower while



T. Edmondson

BEE POLLINATING A FLOWER
OF HELENIUM

THE FLORAL YEAR

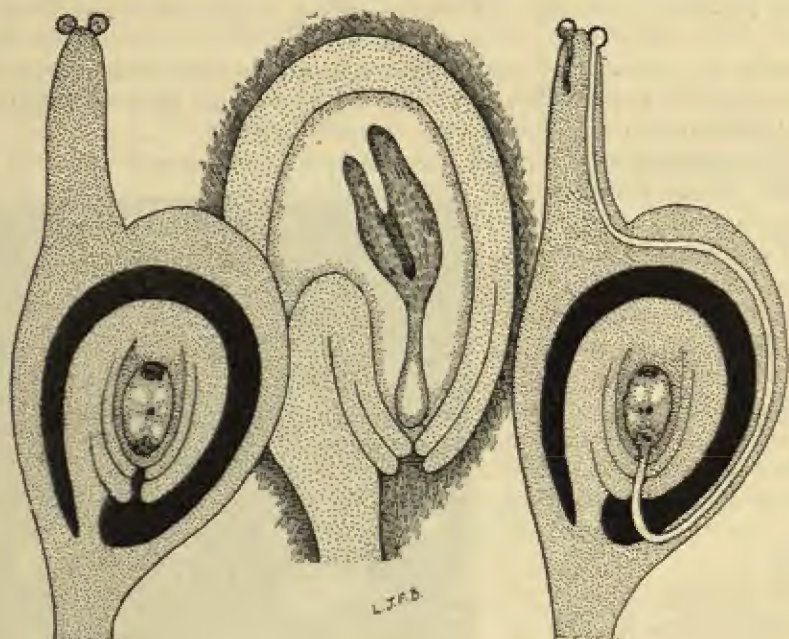
collecting nectar from the nectaries, at the same time rubbing its hairy legs and body on the ripe stamens. But many other flowers have special methods for attracting insects or even for ensuring that they collect the pollen from the anther-heads and deposit other pollen on the stigmas.

First of all, the flowers must attract the insects. This is done in several ways. Either they are conspicuous by virtue of their coloured petals or sepals, or they exude a seductive perfume, or both. Perfume seems to attract insects more surely than colour.

Flies and beetles have only short tongues, which are therefore useful in widely open flowers. Bees and butterflies, on the other hand, have long tongues. The flowers that attract such insects, therefore, usually have their nectar deeply seated so that the insect has to push its way right into the flower. This is seen in the violet, white deadnettle, primrose, etc. The structure of the flower ensures that the insect touches both anthers and stigmas. Many examples of this will be seen as the flowers are examined.

FERTILISATION

The next stage in sexual reproduction is fertilisation. The pollen grains on the stigma begin to grow and push out a tube known as the



FERTILISATION (Diagrammatic)

Left, ovule within the ovary and pollen grains on the stigma; *right*, pollen tube grown down ovary wall and piercing ovule; *centre*, embryonic plant developing within the ovule (still further enlarged)

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pollen tube which forces its way down through the style until it comes into contact with the ovule which contains the egg. While the pollen tube is thus growing, two male gametes form inside it; once the end of the pollen tube has reached the egg it bursts, and then one of the male gametes fuses with the egg, thus producing a zygote embedded in the tissue of the ovule. This is the main stage in fertilisation, though other processes also are involved.

Once the egg has been fertilised it is ready to begin developing into a new plant. This it does by the production of new cells while still in the ovule. The ovule also grows, and thus we have a young plant embedded in tissue produced by the ovule. This is the seed, and within each ovary there are as many seeds as there were fertilised ovules. During the development of the seeds the walls of the carpels also develop in various ways; but the style and stigmas usually, but not always, shrivel up. The final result of fertilisation, therefore, is one or more seeds enclosed in the tissue of the carpellary wall now known as the pericarp. The whole structure is the fruit, and, as is well known, this varies according to species of plant.

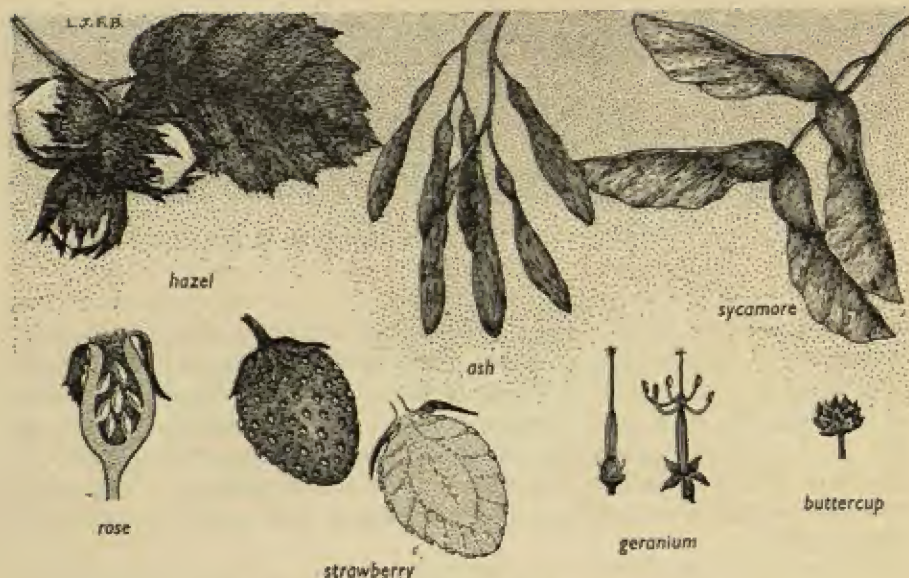
FRUITS

All fruits can be divided into two main groups — dry and fleshy (or succulent).

Dry fruits can again be subdivided into two subsidiary groups according to whether they are capable of opening by some mechanism or another to release their seeds or not. Those fruits which can open mechanically are said to be dehiscent; those which do not open are indehiscent.

The dry indehiscent fruits are the simplest types, and one of the simplest of all is that of the buttercup. Here each carpel, being separate (p. 19), forms a separate fruit. After fertilisation, the carpellary wall undergoes no special change other than that of hardening. So the fruit is a single seed surrounded by a somewhat hard pericarp. The floral receptacle bears a collection of such fruit. This type of fruit is called an achene, and since it is incapable of opening, the entire fruit is disseminated and sown in the soil. Other examples of achenes are seen in the anemone and the wild rose. In the latter, the collection of achenes is enclosed in the red receptacle which here has become flask-shaped. Achenes are all flattened, dry, tough structures, and are invariably formed from single, free carpels.

Strange though it may seem, the fruit of the strawberry is very similar to that of the buttercup. Imagine the receptacle of the fertilised buttercup swelling to a size many times that of the normal before fertilisation. Then imagine this swollen receptacle becoming red and juicy, we should then have a large, red juicy receptacle bearing small, tough achenes on its surface. This is exactly what happens in the case of the strawberry. Thus the familiar, luscious red strawberry is really a swollen receptacle



EXAMPLES OF DRY, INDEHISCENT FRUITS

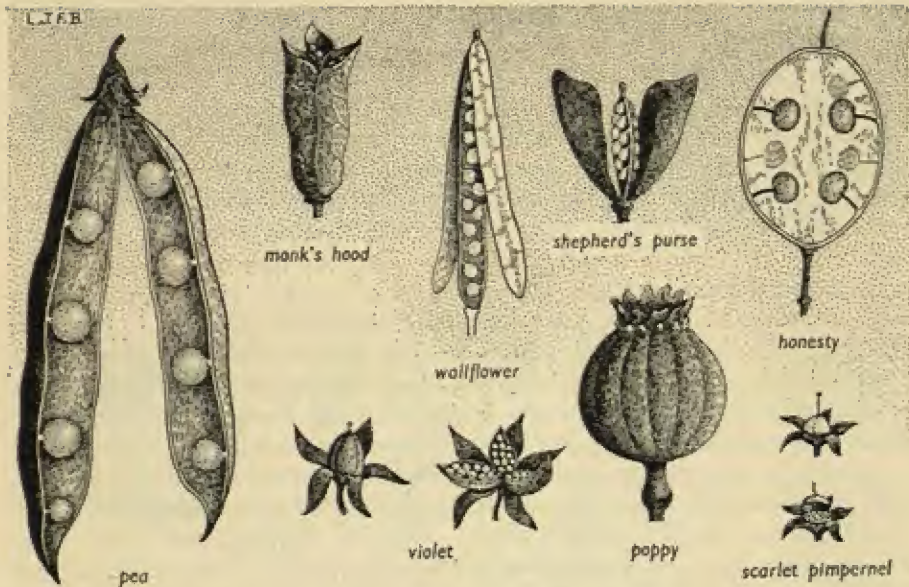
bearing many small, woody fruits on its surface. The red juicy part is neither fruit nor berry.

Closely related to the achene is the fruit called a samara. In this case also only one seed is enclosed in the fruit; but in the samara the pericarp becomes extended at the top to form a long, flattened wing-like structure. A good example of a samara is the fruit of the ash. When the fruit is released, the wing-like outgrowth acts as a wing to aid in the distribution of the fruit. The fruit of the sycamore and maple is also a samara, but in this case two, and sometimes even three, samaras are fused slightly at their swollen bases.

Another type of fruit closely related to the achene is the true nut. In this case, there is normally only one seed present. The pericarp becomes very hard and woody. (The term 'nut' is applied to such fruits as that of the walnut and the coco-nut, but neither of these is a true nut (p. 33).) A good example of a true nut is that of the hazel. The shell is the hardened pericarp, and the edible kernel is the seed. The carpel of the hazel contains two ovules, but usually only one of these develops.

The schizocarp is an interesting type of indehiscent fruit in that it is formed from two or more carpels and when fully ripe breaks into portions, each portion containing one seed. For example, the schizocarp of the mallow and the hollyhock is round and bun-shaped; when ripe, it splits into one-seeded segments in a manner in which a cake is cut. The geranium and crane's bills show an even more curious type of schizocarp. Here the ovary is composed of five joined carpels. The style is long and

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EXAMPLES OF DRY, DEHISCENT FRUITS

tapering, and even when the fruit is ripe this style persists as a tall, tough spike. Finally the fruit breaks up as the base into its five, one-seeded portions. The central portion of the persistent style remains rigid; but the outer tissues of the style also break from the top into five portions, each portion being joined at the base to one of the one-seeded portions of the fruit. When breaking is complete, each ribbon-like portion of the style begins to tear away from the central rigid portion, from the bottom upwards, carrying one of the one-seeded parts with it. This happens so suddenly that each seed enclosed in part of the fruit wall is thrown some considerable distance away from the parent plant.

One of the simplest kinds of dry dehiscent or splitting fruits is that known as the *follicle*. It occurs in the marsh marigold, monk's hood and many others. Each follicle is formed from a single, free carpel containing several ovules. After fertilisation and complete ripening of the seeds, the follicle splits along the entire length of its inner margin.

The *legume*, another dehiscent fruit, common in the pea family, differs from the follicle in that it splits along both inner and outer margins and then the two halves of the pericarp move apart, thus exposing the seeds. They will only do this when they become dry, and in some cases while doing so, each half suddenly twists, thus ejecting the seeds. The pods of peas and beans twist very markedly, but those of gorse, broom and vetches do not: these open very suddenly with a distinctly audible 'pop'.

Members of the wallflower family present a curious fruit structure

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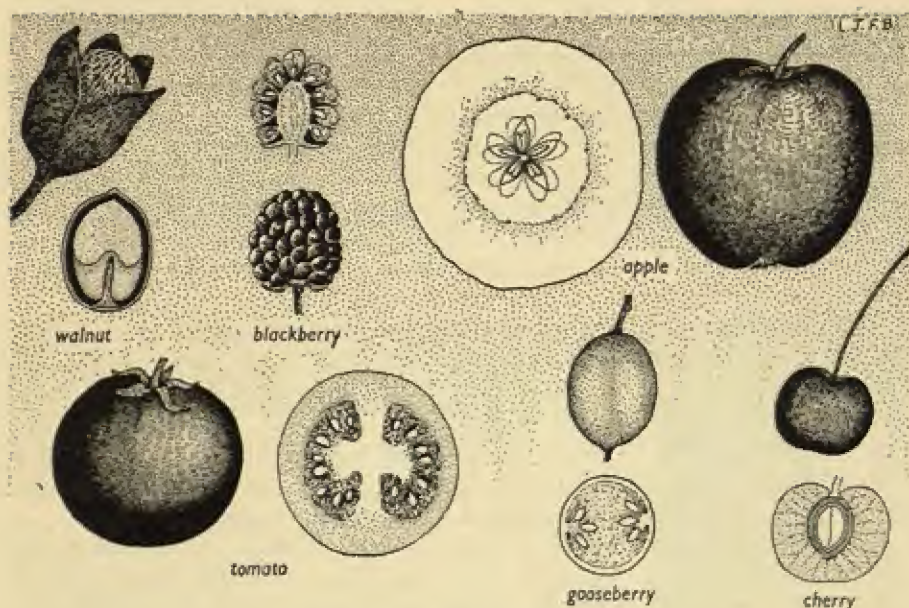
owing to the presence in the ovary of an unusual tissue. The ovary itself is formed, like that of the gooseberry, by the fusion along their two margins of two carpels. But between these two carpels is a partition known as the false septum. This septum persists in the ripe fruit, and so within the fruit there are two chambers separated by the false septum. In the wallflower and many other members of the family, the fruit is elongated. The two parts of the pericarp, when ripe, separate from the false septum beginning at the bottom, and thus expose the septum with the seeds attached. In another member of the wallflower family, the shepherd's purse, the fruit varies somewhat. It is heart-shaped, and when ripe the two halves separate away from the false septum beginning at the top. The fruit of honesty is very similar to that of the wallflower except that it is flatter and oval in shape, with the result that the exposed false septum is large, oval and has a tissue-like texture. These fruits of the wallflower family are variations of a general form known as a siliqua.

The type of dehiscent fruit which shows the greatest number of variations is the capsule. It is impossible to consider all these variations. The capsule of the violet is three-valved. When it dehisces, the three boat-shaped valves open out, thus exposing the seeds (p. 31). These are spherical and slippery. As the sides of the valve begin to get dry they straighten themselves out, thus gradually approaching each other. In this way, the slippery seeds are forced out of the open valve and shoot sometimes considerable distances away from the parent plant. The fruit of the scarlet pimpernel is also a capsule (p. 31), but different from that of the violet. It is spherical and about the size of a small pea. When ripe it splits into halves, the upper half opening up like a lid, thus exposing the seeds. The capsule of the plantain is conical and opens by a transverse slit.

The capsular fruit of the poppy is unique. It is large and more or less globular. From the inner surface of the pericarp, tissue-like membranes project into the cavity which, when ripe, is full of hundreds of small, spherical dry seeds. The persistent rays of the stigma at the top of the capsule project, and just beneath these projections is a series of holes. So here is the perfect pepper-box mechanism. As the fruit sways in the wind, so the seeds are sprinkled out of the capsule through the perforations. But if the weather is damp, the holes are closed by internal flaps, thus protecting the seeds (p. 31).

Perhaps the most simple of all fleshy or succulent fruits is the berry. In this fruit, the pericarp becomes juicy and is frequently composed of more than one layer.

The tomato is a good example of a berry. The fruit is formed by the fusion of two or three carpels (p. 26). When ripe, the pericarp is very thick and juicy, and a viscous fluid is also secreted into the ovary cavities. The pericarp is usually divided into a thick, pale-red mass of tissue and an outer thinner, but tough, deep-red skin. (In the less-common yellow tomato these colours are yellow.)



EXAMPLES OF SUCCULENT FRUITS

The fruit of the grape is also a berry, and the entire ovary chamber becomes filled with a very juicy tissue. Gooseberries and currants are also typical berries. Bananas and all citrus fruits are also berries.

The fruits of the cucumber and the marrow are very similar to the berry, but they are formed from an ovary of three fused carpels situated below the petals, and not above as in the case of the berry. This type of fruit is called a pepo.

Of considerable economic importance are those fruits known as drupes, for example, plum, cherry, damson, bullace, sloe, date, and three others frequently referred to as 'nuts' though of course they are not; namely, walnut, coco-nut and almond. A drupe is formed either from one or from three fused carpels. Whereas in the berry the entire pericarp becomes swollen and fleshy, in the case of the drupe the pericarp swells and becomes divided into several layers, not all of which are fleshy — indeed in the coco-nut there are no fleshy pericarp layers at all. The layers of the drupe are usually three in number: an outer one, the epicarp; an inner one, the endocarp; and a layer between these two, the mesocarp.

The fruit of the plum, cherry, sloe and bullace is formed from one carpel only. The kernel inside the stone is the seed. The woody stone itself is the innermost layer of the pericarp, that is, the endocarp. The fleshy part of the fruit is the mesocarp, and the skin is the epicarp.

The walnut is not so familiar as a drupe, yet there is no doubt about its being one when the whole fruit is examined; for what is familiar to

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most of us as the walnut is really only the stone or endocarp surrounding the seed inside. The seed is unusual in that its two large seed-leaves or cotyledons form a corrugated mass (the edible part). These are separated by a thin partition, and sometimes there may be further subdivision by cross-partitions. The mesocarp is very fleshy and green in colour.

The fleshy edible portion of the coco-nut is not part of the fruit-wall at all. It is the food store of the seed. The pericarp is divided into three layers, none of which is fleshy. The epicarp is the familiar woody layer. The mesocarp is a thick layer of fibrous material. The epicarp is a very thin, papery, outer layer.

In the cases of the apple and pear, the fruit is formed not only from the fertilised ovary but also from the receptacle of the flower which becomes swollen and fleshy. The ovary, which is formed from five fused carpels, is also fused to the surrounding receptacle. After fertilisation this receptacle swells to form the fleshy part of the fruit, and the walls of the carpels become tough, forming the horny core embedded in it. Within the core are the seeds. This type of fruit is called a pome.

A very special type of fruit is that of the blackberry and dewberry and their related species, raspberry and loganberry. In the flowers of all these there are many carpels. After fertilisation each carpel forms a small drupe, but all the drupes on one receptacle become slightly fused with each other, giving an aggregate of drupes.

DISPERSAL OF SEEDS AND FRUITS

Many seeds are so small that they are carried away, at any rate for a short distance from the parent plant, by the wind. But other plants bear rather large seeds or fruits and, if overcrowding of the plant population is to be avoided, then the wide dissemination of such seeds and fruits is essential.

Sometimes seeds themselves are distributed, usually by some special mechanism of the fruit as has already been seen, especially in dehiscent fruits. But more often it is the entire fruit which is scattered, and the methods whereby this is done can be grouped under the agencies of animal, wind and water.

The succulent is the simplest example of an animal-distributed fruit. The fruit of the blackberry, for example, forms a delicious food for birds. The fleshy parts of the drupes are digested by the bird, but the seeds are protected by the hard stony layer around them, and thus pass out unharmed with the bird's excreta.

Gardeners and fruit-growers do not need to be reminded of the fondness which birds betray for cherries. They carry them off and eat the fleshy mesocarp, but they cannot manage the stony endocarp containing the seed, so this they drop, and thus the fruit is scattered far and wide.

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The berries of mistletoe are also a favourite of birds, and the distribution is thus ensured (p. 120).

It will be noticed that most of these fruits are large and conspicuous. Thus the birds are attracted to them.

But certain fruits, instead of being edible, develop hooks on their surface by means of which they can cling to passing animals and thus steal a ride. These hooked fruits are sometimes called burs. A very familiar example is that of the goosegrass — familiar because when in fruit this plant is a nuisance to people walking in the country, for the fruits stick to stockings and trouser legs and they are not easy to remove.

The inflorescence of burdock is a capitulum (p. 131), and surrounding this is a collection of bracts. After the fruits have been formed in the capitulum the bracts become dry and hooked, thus giving a collection of fruits forming a bur.

The fruit of wood avens is an achene, but the style does not die away after fertilisation. It persists and becomes stiff and hooked at the top.

There are other types of fruit thus adapted for animal dispersal.

Adaptation for wind dispersal is the cause of most remarkable developments in certain fruits. The samara (p. 30) is a case in point.

Plumed fruits are perhaps even more interesting. In the clematis, for example, the fruits are a collection of achenes borne on a receptacle like those of the buttercup. But here the style of each carpel is very long, and after fertilisation it persists and then develops into a long hair covered with branch hairs which renders the fruit buoyant.

In the flower of the dandelion (p. 133), the calyx is represented by a ring of white hairs called a pappus. After fertilisation the fruit develops into an achene, but the pappus persists, being pushed up on to the top of a very thin stalk, thus forming a beautiful parachute mechanism by means of which the fruit travels sometimes for miles through the air. Thistles also produce beautifully plumed fruits.



FRUITS ADAPTED FOR
DISPERSAL

Top to bottom: dandelion, clematis, avens, goosegrass, burdock

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In general it seems that wind dispersal is the best method whereby plants are disseminated over large areas.

Perhaps the most outstanding example of water dispersal is that of the coco-nut, although this is not seen in Britain. The fruit has a very fibrous mesocarp (p. 34) which is spongy and thus renders the whole fruit buoyant. So the fruit is able to float for miles down-river or along the coast, finally being washed up on to dry land where it germinates.

Water-lily seeds are also dispersed by means of water. On the seed of the white water lily, for example, there is an extra outgrowth called an aril. This is spongy and thus makes the whole seed buoyant, which is consequently enabled to float for some considerable time in the water. In due course, however, the aril becomes saturated and so loses its buoyancy. The seed then sinks to the bottom of the pond or stream, and, after a period of rest, germinates to produce a new plant.

4

THE PLANT'S ENVIRONMENT

And hark ! how blithe the throstle sings !
He, too, is no mean preacher :
Come forth into the light of things,
Let Nature be your teacher.

She has a world of ready wealth,
Our minds and hearts to bless—
Spontaneous wisdom breathed by health,
Truth breathed by cheerfulness.

One impulse from a vernal wood
May teach you more of man,
Of moral evil and of good,
Than all the sages can.

The Tables Turned : WORDSWORTH

TO know the relations which exist between a plant and its environment, both below and above the surface of the soil, is to appreciate why the plant grows best in a certain locality and on a certain soil. We might even learn what plants to expect when exploring a new area for the first time.

THE SOIL

The soil forms the environment of the roots of the normal, terrestrial plant.

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Soil which covers most of the land above sea-level is formed from the rocks which it covers, except in the areas of shifting soils and sands. In its original state, of course, the land was composed of nothing but bare rock. By various means, most rocks in due course become eroded, and thus soil particles are produced. Different soils are produced according to the types of rocks from which they are formed.

As one would expect, there is no hard and fast line between the top soil and the rocks beneath. However, between the actual top soil and the more or less solid rocks below there is an intermediate layer composed of particles larger than those of the soil above but smaller than those of the rock boulders beneath. This intermediate layer is called the sub-soil. The three layers: (1) soil, (2) sub-soil and (3) rock, can usually be distinguished where it is possible to examine the upper part of the earth's crust in profile, such as the elevation of a cliff or that of a quarry.

Soil and the sub-soil layers vary considerably in different localities, the thickness of the soil being partly dependent on the hardness of the rocks and the amount of erosion which has taken place. Erosion of rocks is dependent on several factors, the most important of which are concerned with the prevailing weather conditions. For example, rain gets into the crannies of rocks; then along comes the frost. This causes the



*From "The Geology of South London," by permission
of the Controller of H.M. Stationery Office*

A SOIL PROFILE
Showing soil, sub-soil and rocks

THE FLORAL YEAR

water to freeze, during which process it increases in volume. This has the effect of pushing the rocks apart.

Growing plants and animals also help in the making of soil and in determining the physiography of soil. Much damage has been done in various parts of the world by soil erosion, frequently because man has removed the plants (usually trees) from the surface.

Darwin showed that earthworms are very effective in turning the soil by bringing up particles of it from the lower layers and depositing them on the surface.

The average soil which may be considered to be a rich one should contain the following ingredients (the numbers representing percentage by volume) :

Rock particles	.	.	.	40
Water	.	.	.	25
Air	.	.	.	25
Humus	.	.	.	10

The soil particles vary in size according to the rocks from which they have been formed, and the amount of weathering that has taken place. The three most common types of soil formations are sandstones, clays and limestones. An average soil is composed of a mixture of these, the percentage varying with the locality. Then in many cases the soil is characterised by the presence of other substances. For example, the very white, calcareous soils of Kent and Sussex are due to the presence of chalk. The red soils of Devon and certain parts of Somerset owe their colour to the presence of excess amounts of iron salts and the fact that they have been formed from red sandstone. Black soils usually contain much humus and are therefore very fertile. Soils containing a great deal of lime are alkaline in reaction, whereas those which contain excess water and humus, such as bogs and marshes, are acid. All this is important to the plants which colonise these soils, for certain plants thrive in acid soils, whereas others must have limy soils.

The largest particles in the soil layer are stones and the gravels. With too many such large particles, the soil is very poor since it is unable to retain water, and root hairs cannot make contact with such large surface areas. Sand forms coarse particles. Clay, on the other hand, is composed of fine soil particles. Intermediate between sands and clays are the silts.

A typical soil contains a certain percentage of all these various soil particles, the percentages varying in different parts of the country. A soil which contains chiefly sand and silt, with about 6 per cent clay, is called a sandy soil. If it contains more than 25 per cent clay it is said to be clayey. Between the two there is the more common soil, called loam. Sir John Russell gives the following percentages for a typical loam : clay, 6-15 ; silt, 40-60 ; sand, 20-50. If an exceptional amount of calcium be present in the form of calcium carbonate, such as limestone or chalk, the soil is called a marl.

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Clay has a very high water-retaining capacity. Drainage from clayey soils is therefore difficult. Naturally, holding the water so tenaciously as it does, a clayey soil is badly aerated and heavy. Also, since it is saturated with water, it tends to remain cold. Crops grown on such a soil are usually poor and slow to ripen. In agricultural and horticultural practice, such a soil is improved by the addition of larger particles, for example, sand or coal ash.

Sandy soils are the reverse. They allow an easy percolation of water, and therefore remain very dry — sometimes too dry. They are also well aerated and therefore light. Crops grown on very sandy soils sometimes suffer from lack of water, etc.; so a too sandy soil is not much better than a too clayey soil, though the reverse in composition. A sandy soil can be improved by adding heavy farmyard manure, for with such easy water drainage through a sandy soil, the leaching of useful mineral salts goes on at an excessive rate.

It is clear that, on the average, loams are the best soil for normal plants.

The colour of soil is important, for a dark soil absorbs more heat from the sun's rays than a light soil does. So the temperature of a dark soil is higher than that of a light soil under similar conditions. The temperature of the soil is affected in two other important ways: (1) degree of slope towards, or away from, the sun; (2) amount of evaporation of water from the surface. Evaporation of water from the surface of the soil has a cooling effect. Naturally a very loose, sandy soil has a much higher degree of evaporation than a compact, clayey soil has.

The rate of passage of water through the soil is also important. Soil water is usually present as thin films on the surfaces of the soil particles. Passage of water through the air channels of the soil takes place by means of capillarity, so the size of the soil particles will affect rate of water movement, for the smaller the particles the smaller the air channels and therefore the greater the capillarity. The result is that water moves upwards by capillary attraction much more quickly in a clayey soil than in a sandy soil.

Physical properties (such as size of particles), chemical properties (such as water-content, manure) and biological properties (such as soil bacteria) of soils are all of the utmost importance to the plant. So also are the conditions to which the shoot is subject, such as meteorological conditions, temperature, light intensity, and so forth.

ENVIRONMENT OF PLANTS

A wild plant has no choice in the situation in which it shall grow, that is, its habitat. If it is fortunate enough in arriving, as a seed, at a suitable habitat, then it thrives; if, on the other hand, it finds itself in an unsuitable habitat, then it either perishes or is badly developed.

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With cultivated plants things are different, for cultivation means that the plant is assured of a suitable habitat. For example, soils are manured, they are ploughed, harrowed or hoed, water is supplied when there has been too little rain, and competing weeds are, or should be, removed. Even temperature and light intensities can be controlled in a greenhouse,

In Nature, the control of such conditioning factors is not possible, so that is why in one type of habitat plants of a certain habit are found, whereas the same plants would not succeed in a different habitat.

There are some plants which, during the course of evolution, have undergone changes in mode of life and in structure as an adaptation to their environment. The majority of plants, however, show no definite change in structure, but certainly show a preference for one habit in favour of another. Before examining the various habitats of such normal plants (or mesophytes as they are called) a few of the specially adapted plants are worthy of attention.

SPECIALLY ADAPTED PLANTS

Some plants, instead of growing on and in the soil as normal terrestrial plants do, grow on the branches and in the axils of trees, on palings, gates, etc., thus being raised above the ground, and they are frequently modified accordingly. They are called epiphytes.

In Britain and other temperate countries, epiphytes are represented only by certain microscopic algae growing on the bark of trees, wooden fences, etc.; though certain mesophytes, such as dandelions, sometimes grow in the forks of the branches of trees. It must be emphasised that epiphytes are not parasites like the mistletoe, for they use the tree only as a means of support — not as a source of nutrition.

In tropical countries, especially in the luxuriant vegetation of the jungle, many flowering plants are epiphytic. Certain tropical orchids are. They cling to the branches of the supporting trees by means of clinging roots which twine around the support. They absorb nutrition from the humus (chiefly dead leaves) which collects around them, by means of absorbing roots. Many of these epiphytes have special aerial roots (p. 14) by means of which they collect water.

Xerophytes are those plants which become specially adapted for growth in habitats where water is particularly scarce, and especially where no water may be available for months on end. The majority of desert plants, such as cacti, are xerophytic (p. 14). Pine trees also are frequently subjected to xerophytic conditions, especially in the far north, where the water supply is often frozen and therefore unavailable to the roots. But such plants are adapted for xerophytic conditions in all manner of ways — for example, swollen stems for storing water, reduced leaf area to prevent excess water loss, and so forth.

Plants which grow in water (hydrophytes) also display special peculi-

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arities in structure. The majority of them, such as bladderwort and water milfoil, are able to absorb water all over their surfaces. The requisite gases, oxygen and carbon dioxide, are absorbed from the surrounding water in solution.

The leaves of many hydrophytes float on the surface of the water. This is well exemplified in water lilies and *Potamogeton*. Such plants absorb and give off their necessary gases in the gaseous state, and not dissolved in water. Therefore their stomata are on the upper surface of the leaf, and not mainly on the under surface as in normal terrestrial plants. But these floating leaves run the risk of their surfaces being flooded: this would not matter for a time, but such treatment, if prolonged, would kill them. Certain adaptations are sometimes utilised to prevent flooding. For example, the floating leaves of water lilies and *Potamogeton* have very long stems which thus allow for rise and fall in the water-level. The stalks of certain tropical hydrophytes take the form of a cork screw, and therefore, in order to keep the leaf-blade floating, stretch or contract according to rise and fall in water-level. The leaves of some, such as the *Victoria regia*,¹ even have vertical margins to their leaves. Some partially submerged plants, like arrow-head and water crow-foot, have two kinds of leaves — hydrophytic submerged and normal aerial.

¹ *Flowers in Britain*, by L. J. F. Brimble, p. 30.



T. Edmondson

WHITE WATER LILY

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Plants growing in swamps may be looked upon as semi-hydrophytes. Their roots are water-logged. Consequently their tissues (even of the stems and leaves) are sometimes full of air spaces.

Quite a distinct flora is to be found around our coasts where the plants are periodically swamped by sea-water: in fact a few flowering plants actually grow in shallow sea-water. These are all called halophytes. Even between high-tide mark and the sand dunes there are sea rocket, saltwort, etc. Many of these halophytes have succulent stems and leaves. Nearer the sea itself may be found the curious glasswort, which has very minute leaves but thick, fleshy, jointed stems. The reason why such plants are succulent is that the high concentration of salt in the water around them makes absorption of water difficult. Thus the plants must store what water they can get. The branched stems of the glasswort can absorb dew and rain-water readily.

ECOLOGY OF NORMAL FLOWERING PLANTS

The study of the social life of plants can be made a very extensive one, taking in the examination of the distribution and inter-relationships of plants throughout the world, or it may be a very intensive one, being confined to certain well-defined areas. The extensive study is referred to as plant geography, whereas plant ecology involves a detailed study of definite small areas.

One very important thing to realise is that plants in the wild state have scarcely any choice of home or habitat. On any one piece of ground, tens of thousands of plant seeds must fall in a year, yet it is obvious that only a few actually take to the soil and grow. If it is a barren, infertile soil with a low mineral content, bad exposure and unsuitable climatic conditions, then few plants will succeed on it.

Plants which develop quickly from spores, not seeds, are the first arrivals on newly exposed soil. Spores are produced by many of the simpler types of plants such as algae, fungi, mosses, liverworts and ferns. Spores usually arrive first, since they are very small — microscopic in fact — and are easily carried in the air. Next come the ephemeral and annual flowering plants common to the neighbourhood. A community of plants thus produced is still not very closely packed, and since it has no definitely established perennials it is still open to newcomers. It is therefore said to be an open community.

Then along come more hardy perennials such as certain grasses, thistles, plantains, dandelions, etc., and competition between the plants now begins, for the community is becoming overcrowded. So the weaker plants are choked out and the hardier ones become more firmly established. Finally only those plants which are suited to such soil and other conditions remain, and then the community is said to be closed. Such a closed community of plants living in comparative harmony with

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each other, allowing only those newcomers which are able to compete with them to remain, and choking out any new arrivals which cannot compete or are otherwise unsuited, is then called a plant association.

Thus plants struggle among themselves for a place in the sun. But there is also competition among their roots for a place in the soil. Root competition aims mainly at an adequate water supply.

PLANT ASSOCIATIONS

There are many types of closed communities of plants or plant associations in Britain today. Several associations are often found together, bound by some common bond of habit and habitat. For example, a sand dune, salt marsh, moor, etc., each has its collection of plant associations. Such a collection of associations is called a plant formation.

But no plant association or formation is stable. There are certain factors which determine what type of plant shall constitute it in the first place, such as nature of soil, climate, etc.; but then there are diseases and useful and harmful animals, which come along afterwards to modify it.

Such factors are so numerous that it would be difficult to name them



T. Edmondson

BEECHES IN SUSSEX
Note the sparsity of undergrowth



T. Edmondson

A SCOTS PINE WOOD

all. Also, whereas one certain factor may be very potent in one plant formation, it may be entirely absent in another. However, some factors are rather general. Climatic factors, for example, are very important. These comprise chiefly conditions of rainfall, temperature, light and prevailing winds. In Britain, rainfall is heaviest in the west, and so there wet moorlands and marshes are to be found; in the east, where rainfall is in general not so heavy, dry heaths and downs are common. In the north, especially in Scotland, it is much colder and the vegetation varies accordingly.

Physiographic factors depend on the shape of the country — whether it be mountainous or flat, and so forth. The slope of the land, too, helps to determine

the degree of warmth and light and amount of exposure to the prevailing winds that the plants shall receive.

The chemical and physical nature of the soil provide certain very important factors. Such factors associated with the soil are referred to as edaphic factors.

Finally, a very potent factor in nearly all cases is the biotic factor. This involves the influence of other forms of life — plant and animal. For example, a beech tree casts a very dense shade; therefore little ground vegetation will be found in a beech wood (p. 43). Thus the beech tree is a biotic factor affecting other plants. Many animals also form biotic factors. Some give manure, and are therefore very useful; others, such as herbivorous animals — for example, rabbits, slugs and snails — eat the plants of the formation and are therefore a harmful factor. Animals, such as those used in the dispersal of fruits and seeds, and insects used for pollination, clearly are important biotic factors in plant distribution. Man himself (especially the hiker and the forester) is a biotic factor even where wild plants are concerned.

One, two, or perhaps even three plants form the most important members of a plant association. These are called the dominant plants. The dominants very often help to answer the question: Why are the others such as they are? for the dominants are often biotic

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factors to the other members of the association.

Very often closely associated with the dominant plants are others which are almost as common. They are the sub-dominants. Less common again, but evenly distributed throughout the association, are other plants. These are said to be distributed. Much less common are those plants referred to as being occasional, and the sparsest of all are classified as rare.

WOODLANDS

Woods are very familiar plant associations in Britain. Here there are several types of wood association. In the highest altitudes are those having pine and birch as dominants. At lower levels are two types depending chiefly on the type of soil. On the lower hills with a sandy soil are the dry oak woods, whereas on a clayey soil are the damp oak woods, containing many hazel trees as sub-dominants. On limy soils at the same levels are beech woods and ash woods. On the plains, that is the lowest levels of all, the woods are chiefly a mixture of oak and ash, whereas on very damp soils at such levels the woods are smaller, being composed mainly of alder and willow.

In all cases of wood associations mentioned, the trees are the dominant plants. They act as biotic factors in different ways so that each type of association has its special sub-dominant, distributed, occasional and rare plants. For example, the beech wood is very dense, but usually well manured with the humus from fallen leaves. Sub-dominant on its edge are bluebells. Distributed throughout is little vegetation except such as the bird's-nest orchis, a saprophytic flowering plant which clearly will not suffer from the dense shade, for it has no green foliage leaves (p. 298). In the dry oak wood high up on the hills, sub-dominants are gorse, ling and



W. B. Crump

FLORA OF A DAMP OAK WOOD

THE FLORAL YEAR



Ernst G. Neal

HEDGEROW, SHOWING CLIMBERS—WHITE
BRYONY AND BRAMBLE

bracken. In the dry oak wood of lower levels, the sub-dominants are holly, anemone and bluebell, with the foxglove well distributed. The damp oak wood is much more shaded and the herbaceous undergrowth is represented best by wood sorrel, wood geranium, violet and woodruff.

HEDGEROWS

The hedgerow forms a very interesting plant formation, since there are several levels to examine, comprising chiefly the hedge itself and the bank. The hedge varies, being composed of some or all of the following: hawthorn, hazel, maple, blackthorn, willow, holly, etc. The bank shows even more variations. At the top are plants which have to contend with a certain amount of shade. These may be climbers which can scramble to the light, such as

the bramble, wild rose, clematis, goosegrass, bindweed, honeysuckle, black and white bryony, and certain vetches. These have various means of climbing, but there are others which have no special means of climbing though they can compete against overpowering shade by virtue of their long stems. Such plants are stinging nettle, deadnettle, certain grasses, hedge mustard, garlic mustard, greater stitchwort, etc. Finally there may be plants which prefer the shade, such as certain ferns, wild garlic, wild arum, enchanter's nightshade, foxglove, primrose, ground ivy, germander speedwell, sweet and dog violets, and a host of others.

On the slope of the bank light is abundant. Here, therefore, we find prostrate plants such as creeping buttercup, wild strawberry, etc., and such rosette plants as daisy, plantains and dandelion.

MEADOWS

In the majority of meadow associations the dominants are usually grasses together with white clover. In various meadows certain sub-

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dominants will be found according to soil structure and composition. These may be daisy, buttercup, cowslip, sorrel, ox-eye (or moon-) daisy, and so forth.

Lawns and arable land are associations closely related to meadows, apart from the fact that the dominant plants of the former are cultivated. Usually all other plants — sub-dominant, distributed, occasional or rare, — in such associations are weeds. A weed is any plant which is growing where it is not wanted or is proving itself to be a nuisance.

On cultivated lawns the dominants are various grasses. The most troublesome weeds of such associations are the rosette plants such as dandelion, daisy and plantain. Yarrow and creeping buttercup also form troublesome occasionals. In gardens, the chief weeds are groundsel, lesser bindweed, chickweed, thistles, shepherd's purse, couch grass and dandelion. In cornfields they are the same at the early stages of cultivation: later, along come charlock and crowfoot, and later still, poppy and corn cockle.

AQUATIC AND SEMI-AQUATIC ASSOCIATIONS

Marshes, ponds and lakes, streams and rivers have very characteristic associations. In a marsh the soil is water-logged, but the atmosphere above may be comparatively dry. So only the roots and rhizomes of marsh-growing plants are affected by the presence of excess water.



Ernest G. Neal

A TYPICAL MARSH

Plants present include willow, reed mace, rushes, willowherb, bulrush, water plantain, iris and gypsywort

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T. Edmondson

HEATHER ON A NORTH WALES MOOR

In some marshes, the dominant is osier willow, whereas in others it is species of rush. Sub-dominant and distributed include bur-weed, meadow-sweet, ragged robin, wild iris (flag), marsh marigold, marsh mallow, water mint, water forget-me-not, willowherbs, etc.

Between the marsh and the pond or stream proper comes an intermediate formation, commonly called the marginal formation. This formation can often be divided into three zones or associations which merge into each other, provided the slope of the land towards the open water is a gentle one. The first zone is that nearest the dry land. Here only the roots are subjected to water-logged conditions. The members of this zone are similar to those of the marsh, together with others that are dominant or sub-dominant, such as reeds, bulrushes, common rushes, sedges, horsetails, water cress, iris, gypsywort, water plantain, etc. This shore association is often called a reed-swamp association.

The next association is that intermediate between this reed-swamp association and the complete aquatic association. In it plants are rooted in the soil, with parts of their stems submerged, but leaves and flowers held above the water or floating on it. Such plants are arrow-head, water crowfoot, water lily, *Potamogeton*. In the third association the

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plants are entirely submerged. The most common plants found here are Canadian water weed and tape grass.

HEATHS AND MOORLANDS

Dominant in a heath association is the ling or true heather. In Scotland, and other parts of Britain, bilberry and cross-leaved heath are to be found. Most heath plants are very exposed and therefore have various xerophytic adaptations. The heather, for example, has rolled leaves. A local sub-dominant is gorse which also is adapted to xerophytic conditions. Other local dominants are mat grass and bracken. Occasionals are represented by the Scots pine.

Real moorland associations differ from the heath in that their soil is very peaty and therefore exceptionally acid. Peat is formed chiefly by the accumulation through hundreds of years of *Sphagnum*, the peat moss, common in certain parts of the west of England, the Scottish mainland and Isles, Northern Ireland and Eire. Higher up the hills and mountains, wet moor associations often have cotton grass (which is not a true grass) as the dominant. Cotton grass associations can be found on the higher moors of Yorkshire and on Exmoor and Dartmoor.

The very low-lying moors contain not only peat but also much water, and they are very acid. Here may be found certain insectivorous plants such as sundew, butterwort and, in the free water, bladderwort. These make up for the lack of available nitrogen in such soils by means of mechanisms for catching insects which have a high nitrogen content (pp. 268, 493). Large rushes also abound on such soils.

The wet peat soils of the east of England, especially in Cambridgeshire and Norfolk, vary from this in that they are rich in mineral salts, especially calcium, and are therefore alkaline. They are commonly called fens, and their plant associations differ widely from those of the acid peat associations of the west and north. The dominant is alder.



Harold Bastie

COTTON GRASS



Harold Bastin

MARRAM GRASS GROWING ON BLOWN SAND

SAND DUNES

An important plant formation is that of sand dunes, so common near the seashores of Britain. Here conditions are very exceptional, for the sand is very loose and consequently abnormally dry. The surface is exposed to bright light, much heat and frequently high winds. Therefore loss of water from the plants could occur at an abnormally high rate. But a sand dune has several aspects, thus giving several plant associations.

There is the surface sloping towards the sea. Here the sand is loose and drifting. The dominant plants are not very thick, so many bare patches of sand are exposed. The chief plant is the sea couch grass with long rhizomes which help to bind the sand together and thus reduce drifting.

The next association is that on the top of the dune. Here the sand is still loose and constantly shifting, but not so much as that sloping towards the sea. The dominant is marram grass. Along certain parts of the south coast, tamarisk also grows.

The third association of the sand-dune formation is on the leeward side of the dune. Here are the oldest parts of the dune, formed by sand blown in by the sea breezes. The sand, however, is much more firmly set. The dominant plant is creeping willow. Distributed and occasional plants are represented by bird's-foot trefoil, rest harrow, thyme and stonecrop.

PLANT CLASSIFICATION

And because the breath of flowers is far sweeter in the air (where it comes and goes, like the warbling of music) than in the hand, therefore nothing is more fit for that delight than to know what be the flowers and plants that do best perfume the air.

Essays: Of Gardens: FRANCIS BACON

THROUGHOUT the ages, different bases have been chosen for plant classification; but today we use the most natural of them all, that is, according to evolutionary sequence so far as that can be recognised. During evolution, living organisms have undergone progressive changes, mainly involving an increase in efficiency and complexity, though at times one comes across examples of degeneration and degradation. So it does not always follow that the more simple a plant organism is, therefore the lower it is in the scale of evolution; but it is usually so.

As already stated on p. 3, flowering plants are placed in two main groups — the Angiosperms and the Gymnosperms. This book is concerned mainly with the former.

In a classification which is based on evolutionary sequence and change the more variable characteristics are the most valuable as clues. The root, for example, is practically useless, for it is subject to the least changeable of all environments and has, therefore, suffered little change throughout the ages. Foliage leaves, too, are not sufficiently diagnostic as a basis for plant classification, though sometimes they are useful for making specific distinctions. In fact, the most changeable organ of the plant is the flower, so it is on this structure mainly, though not entirely, that flowering-plant classification is based.

The classification of plants (and animals) today follows fairly closely that made by the Swedish biologist Carl von Linné (usually known as Linnaeus). His whole scheme for the classification of plants was set out in his *Species Plantarum* published during 1753, though he had actually announced his system in *Systema Naturae* in 1735. But, of course, many thousands of different plants have been discovered since the days of Linnaeus, and botanical research has also revealed much more about them, so that though present-day classification does follow the technique devised by Linnaeus, it has become much modified.

Angiosperms may first of all be divided into two great groups — the Monocotyledons and the Dicotyledons.

The Dicotyledons form the larger group. They are characterised by the presence of two cotyledons or seed-leaves in their embryos. Their

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foliage leaves are usually narrow at the base, and may be stalked or stalkless. Most of them are net-veined. The stems and roots of many become secondarily thickened. The flowers are sometimes composed of whorls with an indefinite number of segments, though most dicotyledonous flowers have either five, or a multiple of five, or four, or a multiple of four, members to each whorl. Dicotyledons are either annual, biennial, ephemeral or perennial, the last-named often taking the form of shrubs or trees. In some Dicotyledons the petals are free, whereas in others they are joined. Those having free petals are looked upon as being lower in the scale of evolution.

The Monocotyledons comprise those families of Angiosperms characterised by the presence of only one cotyledon in the embryo. Their leaves are usually (but not always) parallel-veined with almost entire (smooth) margins, whereas the leaves of Dicotyledons are net-veined and frequently serrated, lobed or compound. In Monocotyledons the number of parts of the flower is usually three or multiples of three. The internal anatomy, especially of stems and roots, also differs from that of Dicotyledons. For example, in very few Monocotyledons is there any mechanism for secondary thickening, so there are few monocotyledonous trees or shrubs.

PLANT NOMENCLATURE

Every type of plant is a species. For example, among the buttercups or crowfoots, there are several types, such as creeping buttercup, bulbous buttercup, water crowfoot, and so forth. Each is a separate species. Creeping buttercups belong to one species, but bulbous buttercups belong to a different species from that of the creeping. So there are different species of buttercups, but they are all closely related to each other so they are grouped together in what is called a genus. Therefore different buttercups belong to the same genus but different species.

In order to make the necessary distinction in nomenclature, Linnaeus suggested each plant having two names, one to designate the genus, the other the species. That is done today for all plants. For example, all buttercups belong to the genus *Ranunculus*. This is the generic name. Then each species is assigned a second or specific name. Thus the botanical name for the water crowfoot is *Ranunculus aquatilis*; that for the bulbous buttercup is *Ranunculus bulbosus*; creeping buttercup, *Ranunculus repens*; the lesser celandine, *Ranunculus ficaria*, and so on for the rest of the genus. The generic name is usually chosen to indicate some character of the whole genus, and the specific name to indicate an outstanding character of the species. Sometimes the names are chosen to celebrate the name of some well-known botanist, and sometimes the names are chosen for other reasons. Throughout this book, where possible, the origin of the botanical names will be given.

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Just as species differ from each other, though some resemble each another sufficiently to be grouped under the same genus, so do genera themselves differ from or resemble each other. For example, closely related to the buttercup is the garden paeony. Thus, though the paeony is sufficiently different from the members of the genus *Ranunculus* to warrant another genus (*Paeonia*), the two genera resemble each other closely and are kept together in classification. Other genera also resembling these two are the following (in brackets after each genus is the common name of one plant belonging to it): *Caltha* (marsh marigold), *Nigella* (love-in-a-mist), *Aquilegia* (columbine), *Delphinium* (larkspur), *Aconitum* (monk's hood), *Clematis* (clematis or traveller's joy), *Thalictrum* (meadow rue), *Anemone* (wood anemone), *Adonis* (pheasant's eye), *Myosurus* (mouse-tail), *Trollius* (globe flower), *Helleborus* (hellebore), *Eranthis* (winter aconite). All these genera are so closely related to each other that they are placed in a still bigger group called a family. In this case the family is called RANUNCULACEAE. Even families are grouped together into orders; but such detail will not be taken into account here.

Then all such orders are grouped under either Monocotyledons or Dicotyledons. In this book the family of the plant will be given, and the abbreviation Monocot. or Dicot. placed after it to indicate whether the family is a monocotyledonous or a dicotyledonous one.

By plant breeding and hybridisation, plant species have become even further subdivided, and this sometimes also happens among wild flowers. The species can therefore sometimes be divided into sub-species and varieties; but only in rare cases will it be necessary to consider varieties in a book devoted almost entirely to wild plants.

PART II

JANUARY

What is winter? A word,
A figure, a clever guess.
That time-word does not answer to
This drowsy wakefulness.
The secret stream scorns the interval
Though the calendar shouts one from the wall;
The spirit has no last days;
And death is no more dead than this
Flower-haunted haze.

What is Winter? EDMUND BLUNDEN

WINTER spells death to many plants and animals, though, as Edmund Blunden claims, to many others it is just a period of restfulness, a "drowsy wakefulness". The hedgehog is hibernating in his nest; the frog is quiet and still, somnolent in his bed of mud at the bottom of a pond. The dormouse goes into such a deep slumber (after putting on extra layers of fat during the autumn) that it lies stiff and cold as in death in its burrow in a hedge or at the base of a tree. Even snails go into a deep winter sleep of hibernation, tucked into their shells, well below the surface of the soil or in a sheltered cranny.

Many plants hibernate though they are unable, like animals, to move to specially protected places for that purpose. Deciduous trees have lost their leaves and all their growth processes practically cease. Some other plants have special means of hibernation, though botanists call it perennation, for there is a difference. In the case of plants which tide themselves over from one growing season, through the period of winter sleep, to the next growing season, only a special part of the plant is utilised for the purpose. For a long season the bulbs of wild daffodils and bluebells remain dormant in the soil; so also do crocus corms and bracken rhizomes. But such means of withstanding the inclemencies of winter are also a means of vegetative reproduction of those plants (p. 17).

The name January is derived from the Latin *Ianuaris* after the two-faced god *Janus* — looking backwards and forwards; the god was concerned mainly with the beginnings of things. January, then, is one of the months of winter sleep and future preparation. Even evergreens, such as holly, which look superficially just as lively during winter as they do during summer, are actually living at a much slower rate. For

example, during the month of May (a month of quick growth, for such factors as temperature, light intensity, length of day, water supply, and so forth, all encourage the processes involved in growth), the dark-green holly is covered with splashes of a lighter hue ; these are the young growing shoots. But there is no such growth during the winter month of January, so the holly has by then assumed a more sombre hue.

It does not follow from all this that during January there is nothing for the keen observer to see and nothing for the botanist to study. Far from it. Even the gardener can ill afford to neglect his garden during this period of suspended animation in Nature. On those all too rare crisp and dry days there are digging and edge-trimming to be done, though the idle arable land should have been turned

over at the beginning of the winter to allow the maximum weathering of the soil. During the wet and soggy days the gardener is well advised to keep off the garden—he would only do himself and his charge more harm than good—but indoors he can plan for the next season : lay out his garden in theory, scan the seedsmen's catalogues and so forth, for in spring there will be so much to do that some sort of plan is essential, even if parts of it have to be abandoned at the last minute. And if he is fortunate enough to have a greenhouse, then there is always something to be done, even during scanty January.

—so in Winter

The gardener sees what he will never see.
Here, in his lamp-lit parable, he'll scan
Catalogues bright with colour and with hope,
Dearest delusions of creative mind,
His lamp-lit walls, his lamp-lit table painting
Fabulous flowers flung as he desires.
Fantastic, tossed, and all from shilling packet
— An acre sprung from one expended coin —
Visions of what might be.

The Garden : V. SACKVILLE-WEST



M. Hubbard

DECIDUOUS BROAD-LEAVED AND EVER-
GREEN CONIFEROUS TREES IN
WINTER

THE FLORAL YEAR

But those of us who have no garden of our own must rely on the wider expanses of Nature's garden. Then what we shall see depends in no mean measure on our own individual attitude towards this season of the year; and not to any small degree upon the weather itself — for January is not often the month of crisp, frosty days, but frequently wet, cold and dreary. Are we then to accept the philosophy of James Thomson, the eighteenth-century poet (bearing in mind that he was possibly the precursor of romanticism), and treat January as one of the most delightful of months? In planning his "Winter" for *The Seasons*, Thomson wrote to Dr. William Cranstoun:

Nature delights me in every form, I am now just now painting her, in her most lugubrious dress; for my own amusement, describing winter as it presents itself, after my first proposal of the subject,

I sing of winter, and his gelid reign;
Nor let a ryming insect of the spring,
Deem it a barren theme. to me 'tis full
Of manly charms; to me, who court the shade,
Whom, the gay seasons suit not, and who shun
The glare of summer. Welcom! kindred glooms!
Drear awfull wintry, horrors, welcome all!

Or are we to receive this month as Bridges visualised it?

Cold is the winter day, misty and dark:
The sunless sky with faded gleams is rent:
And patches of thin snow outlying, mark
The landscape with a drear disfigurement.

January: R. BRIDGES

One wonders how often the word 'drear' would occur in a January anthology.

In any event, whatever attitude we adopt towards this cold month, it must be recognised that in these islands of indifferent and inconsistent weather, blossoms come and go as inconsistently as the weather itself. Nearly always — drear and wet, or crisp, cold and exhilarating — the groundsel will be found flowering in the garden and on other arable land. Chickweed is certainly also in evidence as a weed, and might even be displaying a few tiny white blossoms. The shepherd's purse is in evidence all the year round, though it does not often flower during the months of December and January: yet some flowering specimens of this garden weed may be seen during this month. The field speedwell, another weed of arable land, displays its lovely blue flowers mainly during April to September, though sometimes the flowers appear as early as January if the weather is not too unkind.

On the lawn and in the fields a few white daisies and some golden dandelions are almost certainly to be seen, though their flower-heads will be closed, and so inconspicuous, if the weather is bad. On heaths, embank-

ments and open downs there will surely be a few golden blooms on the gorse bushes, for throughout the year that plant is scarcely ever without a few flowers.

In more sheltered waste places and on cultivated ground, flowers of the two deadnettlés, white and red, might also be discovered.

In woods and on sheltered banks the barren strawberry may be displaying a few of its white rosaceous blooms, whereas in the woods only those comparatively rare relatives of the buttercup, the hellebores—green hellebore and stinking or foetid hellebore—may also have broken bud.

Although it is almost certain that in the gardens of the south a few snowdrops and primroses (especially the purple 'Wandas') will already be in bloom, it is not likely that the wild counterparts of either of them will yet be in evidence, though on occasion one comes across a few January visitors.

For the benefit of the majority of nature lovers, however, consideration of all these flowers must be left until those seasons when they more often appear in bloom. This seems to leave little else to study during the month of January; but if we continue Bridges' dreary thoughts on January we shall obtain a clue for further study:

The trees their mournful branches lift aloft:
The oak with knotty twigs is full of trust,
With bud-thronged bough the cherry in the croft;
The chestnut holds her glaucous knops upthrust.

January: R. BRIDGES

Though there are a few plants which sometimes adopt the habit of a tree and sometimes that of a shrub so that it is difficult to assign them to their true morphological category, most trees in Britain have diagnostic characters.

The trees are perhaps the most beautiful things in England; splendidly broad-shouldered, ancient, generous, free, venerable, vast trees.—KAREL KAPEK

The most diagnostic features of trees, however, are leaves, flowers and fruit. With the exception of the few evergreens, such features are not revealed until more favourable seasons of the year. The deciduous trees will therefore be considered during their flowering seasons in this book (though even more detailed consideration is given in *Trees in Britain*¹). In spite of this, however, it is possible to identify even deciduous trees during the winter months. They can then be recognised mainly by their bark, scheme of branching and winter buds. It is proposed therefore to spend the month of January studying deciduous trees in winter, leaving the evergreens (of which there are by no means so many) to the end of the year (Chapter 60).

¹ *Trees in Britain*, by L. J. F. Brimble.

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Is the tree's life in bearing leaves
And flowers and fruit in turn? and may
The voice that in dry branches grieves
Be only the wind's going its way?

Those black boughs drawn on the white sky
In stiff and intricate design —
Does that substantial character
Declare no real life within?

Still the unmoving winter trees
Hold up the pure curves of their boughs,
Forms clothing calm immortal life
No change of time or state can rouse.

Winter Trees: EDWARD SHANKS

6

DECIDUOUS TREES IN WINTER

Beauty's not always in a scarlet robe.
She wears an old black shawl;
She flouts the flesh and shows the bone
When winter trees are tall.
More beautiful than fact may be
The shadow on the wall.

The Garden: V. SACKVILLE-WEST

AMONG the several oaks (FAGACEAE, Dicot.), the two most common are the English oak (*Quercus pedunculata*) and the durmast oak (*Q. sessiliflora*). These two were at one time placed together under the specific name *robur*. Then there are the Turkey oak, the holly oak (which is evergreen) and several others (p. 143).

Bare ruined choirs, where late the sweet birds sang.

Sonnet 73: SHAKESPEARE

There is no mistaking the majestic, rugged outline of the oak even from a distance, especially during January when the whole curving and twisting branching system can be seen.

How towers he, too, amid the billowed snows,
An unquelled exile from the summer's throne,
Whose plain, uncinctured front more kingly shows,
Now that the obscuring courtier leaves are flown.

JANUARY

His boughs make music of the winter air,
Jewelled with sleet, like some cathedral font
Where clinging snow-flakes with quaint art repair
The dints and furrows of time's envious brunt.

The Oak: J. R. LOWELL

Older specimens of the English and durmast oaks are of rugged and massive growth. Their height, however, varies from 60 to 150 feet according to conditions and position. The crown of the English oak is supported by characteristically twisting and turning branches and is more or less rounded on the top. The durmast oak is somewhat taller. The bark of both is dark grey in colour, thick and deeply fissured (p. 60). The stout ridged winter twigs are light brown in colour, and the spirally arranged buds are rather small.

The Turkey oak (*Q. cerris*) is more pyramidal in general outline. The bark is very deeply fissured and the twigs have a smooth bark which, however, is covered with light down. The buds are larger than those of the two more common oaks.

There is no mistaking a beech tree (*Fagus sylvatica*), for it usually grows in woods and forests beneath which scarcely any undergrowth can



T. Edmondson

ENGLISH OAK IN WINTER



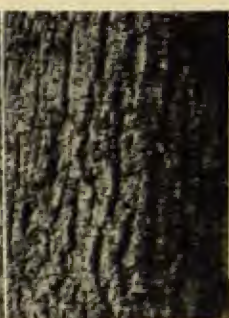
Ash



Oak



Elm



Lime



Beech



Walnut



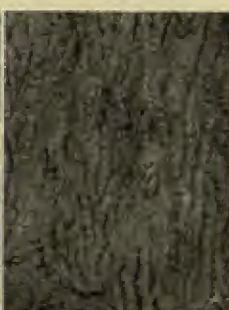
Horse-chestnut



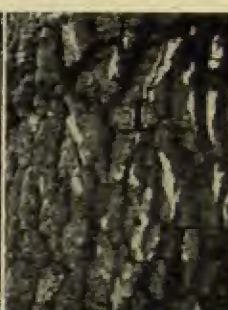
Sycamore



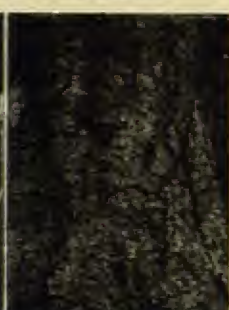
London plane



Black poplar



Old silver birch



Gean



False acacia



White poplar



Crack willow



Sweet chestnut

BARKS OF TREES



Rowan

Laburnum

Crab-apple

Hornbeam

T. Edmondson

Alder

BARK OF TREES (*continued*)

survive (p. 45). Furthermore its great roots are given off just beneath or even above the surface of the soil, so that the tree often thrives on the edge of a bank or escarpment, thus exposing to view many of the sturdy roots.

There at the foot of yonder nodding beech
That wreathes its old fantastic roots so high.

Elegy: GRAY



Harold Barth

BEECH IN WINTER



T. Edmondson

COMMON ELMS IN WINTER

The beech is a handsome tree, attaining a height of 100 feet and bearing a very dense crown. The bole of the trunk is usually clean, though tillering at the base is quite common, especially among those growing in dense woods. But the bark of the trunk is quite characteristic. It is grey and very smooth with no fissures, though sometimes there are large corrugations (p. 60). Frequently, however, it is covered with a green alga. Neither can there be any doubt about the winter twigs. The buds are alternately arranged, very long and pointed, and protected by a series of overlapping, light-brown bud-scales.

Among the several elms (ULMACEAE, Dicot.) in Britain¹ only two are likely to meet the

eye of the majority of observers, namely the common or English elm (*Ulmus procera*) and the wych elm (*U. glabra*). The former is frequently seen in hedgerows, though often standing alone, whereas the latter prefers more open spaces and is most likely to be seen in parks. The common elm sends up many suckers around the base of the trunk, whereas the wych elm does not.

The common elm attains a height of 80 to 100 feet; but the wych elm, though more robust, is seldom so tall. The main branches come off at varying levels from the trunk, giving a layered effect and producing a vertically long crown, though that of the wych elm is more domed. From the bole of the common elm, smaller branches frequently emerge. The dark greyish-brown bark is very fissured (p. 60). The buds of both species are rather small; both are spirally arranged on the twig, though those of the common elm are very unevenly crowded (especially towards the ends of the twigs) whereas those of the wych elm are more widely and evenly spaced.

The branches of the elm are extremely brittle and so they tend to break off very easily; in fact, in this respect the tree is a menace, and its growth in towns and near roads should not be encouraged.

¹ *Trees in Britain*, by L. J. F. Brimble, p. 277.

JANUARY

And for long
At night he could not bear to see
An elm against the stars.
'Twas wrong,
He knew, to blame the innocent tree —
Though some folk hated elms and thought
Them evil, for their great boughs fell
So suddenly . . .

The Elm: WILFRID GIBSON

And now we come to one of the most beautiful trees in Britain, the horse-chestnut (*Aesculus hippocastanum*) of the family SAPINDACEAE, Dicot. It must be realised that this is no relative of the sweet chestnut (p. 66). The horse-chestnut was introduced here from south-eastern Europe during the sixteenth century.

The horse-chestnut is rarely found in woods; it demands too much light for that. It favours open spaces, parks and so forth. It is a very large and rugged tree, growing 80 to 100 feet high. The bole is massive, though in height there is not much of it, for the main branches soon begin to emerge. They grow out obliquely and then dip into graceful curves. The trunk is usually deeply furrowed in mature trees and is covered with a greenish smooth bark which eventually becomes scaly (p. 60).

The winter twigs of the horse-chestnut are very familiar (p. 9). The surface is smooth and light greyish-brown in colour, and it displays conspicuous lenticels. At each node the twig swells to form two opposite platforms on each of which is a large bud subtended by a pronounced leaf-scar. The terminal bud is even larger. Each bud is protected by large, boat-shaped bud-scales which are covered with a protective glutinous substance.

The ash (*Fraxinus excelsior*) belongs to the family OLEACEAE, Dicot. It is known as the "Venus of the Forest" because it is so graceful, though it often grows in hedgerows and meadows where there is plenty of water. It attains a height of



Harold Barton

HORSE-CHESTNUT IN WINTER



ASH IN WINTER

Eric J. Hooking

50 to 80 feet, and the trunk, like that of the sycamore, persists into the crown. The resulting effect is roughly that of an inverted pyramid. The bark (p. 60) is pale grey in colour and somewhat fissured, though it is frequently covered with lichens and mosses. The winter twigs are very diagnostic. They are grey in colour and very smooth, swelling at each node to bear two oppositely inserted buds. Each bud is short, very pointed and intensely black owing to a dense covering of black hairs.

There is quite a number of representatives of the maple family (ACERACEAE, Dicot.) in Britain, but most of them are cultivated exotics. The three members likely to be found growing wild in this country are the field maple, the great maple or sycamore, and the Norway maple.

The field maple, sometimes called common, small-leaved or English maple (*Acer campestre*), is rare as a tree, but is very common as a shrub in hedges and copses. As a tree it averages 20 to 50 feet in height and is rather shapeless. The light-brown bark is usually rough, and sometimes it is even fissured. The younger winter twigs are smooth, but the older ones are ridged with cork. The small, pointed, hairy buds are arranged in opposite pairs, each pair being orientated at right angles to the next.



SYCAMORE IN WINTER

T. Edmondson

The great maple, large-leaved maple or sycamore (*Acer pseudoplatanus*), is altogether a larger tree than the field maple. It is widely spread throughout Britain, though it is not a true native. It is a robust tree even when growing in exposed situations, attaining a height of 70 feet. The greyish bark is comparatively smooth, but it roughens with age (p. 60). The trunk is pronounced and seems to grow right up into the crown since it gives off primary branches for some distance up. The result is a very handsome ovoid crown. Both winter twigs and buds are larger than those of the field maple, and the yellowish-green bud-scales are less hairy.



Harold Bastin

LONDON PLANE IN WINTER

The Norway maple (*A. platanoides*) is not such a robust tree as the sycamore. Its bark is never rough, but it is sometimes flawed with cracks. The winter buds are reddish-brown in colour.

Three species of plane tree (PLATANACEAE, Dicot.) are cultivated in Britain, namely, the oriental plane (*Platanus orientalis*), the western plane (*P. occidentalis*) and the London plane (*P. acerifolia*). The last-named is most probably a hybrid of the other two, both of which are uncommon in Britain, though the oriental plane is a magnificent sight in those parks and gardens where it grows; the western plane has never really been successful here.

The London plane is a favourite in parks and as a street tree in towns, especially London. It attains a height of 70 to 100 feet, with large spreading primary branches and masses of secondary and minor branches which dip with an almost weeping effect.

But it is impossible to mistake the London plane, even in January, for the bark peels off in patches exposing the pale-yellow layers beneath (p. 60). The beautiful twigs are vertically ridged, and the alternately arranged large buds are almost pyramidal in shape. Each bud is subtended by a large leaf-scar and enclosed in a single bud-scale.

The long-living lime or linden tree is seldom seen in the countryside



Harold Bastin

LIME IN WINTER

except in parks and estates and on village greens, for it is most probably not a native of Britain. There are three species, belonging to the genus *Tilia* of the family TILIACEAE, Dicot., namely the common lime (*T. vulgaris*), the large-leaved or red-twigged lime (*T. platyphyllos*) and the small-leaved lime (*T. cordata*). The common lime is probably a hybrid of the other two, and it is the species most frequently seen in parks, gardens and streets, the other two being confined to woods in certain localities only.

The common lime attains a height of anything from 100 to 140 feet at maturity; but smaller specimens than this are more usual. The trunk is tall and clean, supporting a large, somewhat elongated, crown. The bark of the bole is fairly

smooth though slightly fissured (p. 60) and greyish-green in colour; but it tends to roughen with age. The bole is frequently covered with lichens, for the lime tree is a favourite site for these lowly plants.

The branching is extraordinary. The main branches shoot out from the trunk upwards and at an oblique angle, then fairly suddenly they dip into graceful curves; but towards their ends the minor branches much more suddenly veer from the downward curve into quite a different direction.

The winter buds are each protected by one large and one small bud-scale. The lateral buds are arranged alternately on the stem. The smooth bark of the twigs tends to be reddish. (In the large-leaved lime it is quite red.)

It is quite possible that one would not see a single specimen of the sweet chestnut (*Castanea sativa*) in a day's march, for it is not native to Britain and is seldom found growing wild. There are many specimens, however, to be found in woods and on estates. It is fairly common in the south of England, and especially in Kent, Surrey and Sussex. It is the tree (not to be confused with the horse-chestnut, to which it is not related, p. 63) which yields the edible chestnut, though the crops of the



T. Edmondson

SPANISH CHESTNUT IN WINTER

fruit are not large in this country. Since this tree is indigenous to Mediterranean countries it is sometimes known as Spanish, French, Italian or European chestnut. It belongs to the same family as the oaks and the beeches, namely, FAGACEAE, Dicot.

The sweet chestnut is a tall tree (averaging 60 to 80 feet, and even sometimes up to 110 feet), but its bole is not very pronounced since the main branches leave the trunk at a fairly low level.

The bark is regularly fissured and frequently takes on a very characteristic spiral twist (p. 60). The winter twigs are ribbed, and the large alternately arranged buds are ovoid with pronounced protective bud-scales — usually two to four, one of which (the lowest) is larger than the other.

To the family SALICACEAE, Dicot. belong the willows and the poplars. The former are a very difficult group to discuss because there is still much confusion over their identity. Not even professional botanists have been able to decide how many species there are, and though it is not hard to identify a willow it is extremely difficult to relegate it to its species. This applies even when the plants are in full leaf or flower, so, although



Harold Bastin

POLLARDED CRACK WILLOWS IN WINTER

quite a number are considered in this book at such a stage, it will be best to confine ourselves to just a few during the winter months, for it is very unlikely that actual specific identification of all of them at this time is really possible.

The white or Huntingdon willow (*Salix alba*) is to be found growing along river-banks and is frequently pollarded. It is widespread throughout Britain except in the very north of Scotland. As an unpollarded tree it is quite large, averaging 60 to 80 feet in height, sometimes even more. The trunk is robust and is covered with a much-fissured bark which is used for tanning purposes. The twigs and spirally arranged winter buds are covered with a fine down, and the latter are each protected by one large bud-scale only. The wood of all species of willow is very elastic — a character which renders it valuable for certain specific purposes, as will be seen later. This brings to mind William, Marquess of Winchester, who, when asked how he contrived to remain in favour with so many different princes, replied: "By being a willow, and not an oak" (*Remains*: Camden).

In general appearance, the crack willow (*S. fragilis*, p. 60) resembles the white willow, but there are distinguishing details. This tree also favours river-beds. The twigs of the crack willow are easily snapped off their branches (hence the common name), whereas those of the white

willow are not. Furthermore, the twigs and buds of the crack willow are quite hairless.

It is difficult to distinguish between the white willow and the cricket-bat willow (*S. coerulea*), though the latter is seldom seen except in the east of England. It is a tall tree, and the branches grow obliquely upwards, giving a vertically narrow crown. Since the wood is very elastic, even for a willow, it is used for making cricket bats.

The goat willow or sallow (*S. caprea*) favours drier situations. It is also called pussy willow and sometimes palm. This tree seldom averages more than 20 feet in height. The twigs bear very few hairs, and the spirally arranged hairs are large and yellow.

The twigs of the grey willow (*S. cinerea*), another common willow, are very hairy.

The poplars belong to the genus *Populus*, also of the family SALICACEAE, Dicot.; but they are not so difficult to identify as the willows.

The white poplar (*P. alba*), sometimes called abele, is a small tree, usually attaining a height of 50 feet. It is not native to Britain, but was probably introduced from Holland. The bark of the bole is grey and more or less smooth except towards the base where it is vertically fissured and almost black (p. 60). The twigs are very hairy and the pointed, also hairy, buds are arranged alternately.

The grey poplar (*P. canescens*) is not easy to distinguish from the white during winter. It is most probably indigenous to Britain.

The aspen (*P. tremula*), sometimes called asp, is widespread throughout the whole of Britain. It seldom exceeds 50 feet in height, but, like the white poplar, it is very prone to produce suckers. The bark is smooth and grey in colour. The winter buds are quite hairless.

The black poplar (*P. nigra*) is not very common, though it is frequently encouraged as a tree in parks and gardens. It averages 50 to 80 feet in height and yields plenty of timber which, however, is only used in turnery. The bole is very



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WHITE POPLAR IN WINTER

THE FLORAL YEAR



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BLACK POPLAR IN WINTER

pronounced and is fissured, frequently displaying a spiral pattern (p. 60). Both bole and branches are often heavily burred. The vertically ridged twigs bear sharp-pointed buds, alternately arranged.

The tall, pyramidal, cypress-like nature of the Lombardy poplar (*P. nigra* var. *pyramidalis*) cannot be mistaken. All its branches grow practically vertically. It is cultivated solely for ornamental effect.

There are other poplars, most of which have been introduced from North America; but they are not so common.

Among the plants of the rose family (ROSACEAE, Dicot.) there are several trees. One of the most common (though not as a tree but rather as a bush with

no pronounced bole) is the sloe or blackthorn (*Prunus spinosa*), which is to be seen in hedgerows as a bush or, less commonly, as a small isolated tree in copses. Even when isolated, at any rate in the wild state, it gradually assumes the habit of a bush because of its habit of sending up huge suckers from its roots; but under cultivation these suckers can be pruned away, and the plant then makes quite a handsome small tree.

The bark of the blackthorn is black, as its name implies. The branches are twisted irregularly. They bear very pronounced thorns, as the common name also implies. These thorns easily snap at their tips, which explains why in some rural areas the blackthorn is supposed to be poisonous, because when the thorn penetrates the skin the tip breaks off and becomes embedded in the flesh and festering ensues.

The buds are small and brown and are each protected by a number of bud-scales. They are arranged spirally on the twig.

A near relative of the blackthorn is the bullace (*P. insititia*) which is sometimes seen growing in hedges, though it is probably a garden escape — the cultivated form being the well-known damson. The bullace is of a more robust habit than the blackthorn; the branches are not so irregular, and the bark is not black but brown. Furthermore there are not so many thorns, though there are a few.

Belonging to the same genus (*Prunus*) is the wild plum (*P. domestica*),

the precursor of the cultivated plum. In its winter habit it is difficult to distinguish from the bullace. It might be seen growing in hedges. Its brown branches grow reasonably straight and there are no thorns at all.

Wild cherries are also members of the genus *Prunus*. There are three kinds, namely, gean, bird cherry and wild or dwarf cherry. All three may be found growing in woods: the gean is the most widely distributed (chiefly on limestone soils); the bird cherry is confined to the woods of the north; the wild cherry is sometimes seen in woods, but it appears more frequently in hedges.

The gean (*P. avium*), sometimes, but locally, called mazard, will attain a height of 80 to 110 feet under good conditions; but it does not usually grow so high. Not far from the ground the trunk branches into a very massive and spreading crown. The bark is dull brown in colour (p. 60) and on the younger twigs it tends to peel off horizontally.

The twigs of the gean are sturdy, and the winter buds are arranged on them in a spiral fashion. Each bud is protected by a number of bud-scales.

The bird cherry (*P. padus*), seldom seen in the south, will attain a height of 30 feet, though, owing to the fact that it is so prone to produce suckers, it does not often attain arboreal habit. It is not difficult to identify



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OLD CRAB-APPLE IN WINTER

THE FLORAL YEAR

because its bark peels horizontally just as that of the garden cherry does. The wood is reddish yellow and beautifully veined.

The wild or dwarf cherry (*P. cerasus*) also produces suckers in abundance so it seldom develops into a tree. It is much more common in the south than in the north of England, and never grows in Scotland.

One of the largest of the wild trees belonging to the rose family (ROSACEAE, Dicot.) is the wild apple or crab-apple (*Malus pumila*) — the progenitor of all cultivated apples. It usually grows as a tree in woods and hedges throughout Britain (though not in the very north of Scotland), attaining a height of anything from 20 to 50 feet (p. 71).

The entire tree usually presents an irregular appearance; even the bole of the trunk is seldom straight and is covered with dark grey, well-fissured bark (p. 61). It is possible to distinguish two types of twigs. The younger ones are long, brown and shiny, and they bear small brown buds adpressed to the stem. Then there are older lateral shoots or spurs which are short and covered with many scale-scars. Frequently each such spur bears a spine at the end. The buds of these spurs are brown and much larger than the others (usually they are the flower-buds), and whereas they are covered with hairs, the smaller buds



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WHITE BEAM IN WINTER

of the younger twigs are practically hairless.

The wild pear (*Pyrus communis*) is not common these days, though it is the progenitor of the garden pear. It may be found growing in hedges in southern England, attaining a height of 20 to 60 feet. Like its cultivated form, it resembles the apple, though the crown is more extended vertically and less spreading horizontally. The branches are somewhat spiny. The buds, unlike those of the apple, are not at all hairy but are smooth and dark-brown in colour.

To the genus *Sorbus* of the family ROSACEAE, Dicot. belong four trees — white beam, wild service, rowan and true service.

The white beam (*S. aria*) is not a common tree though it is very widespread, showing a preference for the woods and banks of calcareous soils in Ireland and the south of England. On exposed sites it usually occurs as a large, robust bush; but in more sheltered positions it will become arboreal and attain a height of 50 feet. Then the trunk is pronounced and straight with a smooth bark which becomes somewhat fissured as the tree grows old.

The twigs are robust and thick and the longitudinal groups of bud-scales stand out prominently. The green buds too, are large and are protected by several green bud-scales.

The wild service (*S. torminalis*) or maple tree (not to be confused with the true maple, p. 64) is rare and not easy to distinguish from the white beam during the winter months.

The most common and indeed popular member of the genus *Sorbus* is the rowan (*S. aucuparia*). This tree is just as frequently referred to as the mountain ash, which is a pity because though its leaves are like those of the ash itself there is no other resemblance between the two trees, which botanically are far apart. Though the rowan is a common sight on mountain-sides in north Britain and in woods further south, it is such a handsome plant that it is often cultivated in gardens, parks and streets. So popular and well known is this tree that it should be no cause for wonder that it has many local names (p. 195).



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ROWAN IN WINTER

THE FLORAL YEAR

The average height of the rowan is 40 feet. The trunk is straight and it does not divide into large primary branches. The bark is smooth on both branches and trunk when young, but as the tree ages then the bark on the trunk becomes horizontally fissured (p. 61).

It is not difficult to identify the rowan, since the buds are very large, each being protected by a few dark-coloured, boat-shaped bud-scales which bear white hairs, especially at the tip of the bud. Suckers frequently shoot out, but only close to the base of the bole.

The true service (*S. domestica*), sometimes called sorb or chequer tree, is now very rare in Britain.

The last of the rosaceous trees to be considered is the familiar hawthorn or may, which belongs to the genus *Crataegus*. There are two species — *C. monogyna* which is very common and frequently grows as a bush in hedgerows (when it is known in some localities as quick), and *C. oxyacanthoides* which is usually a small tree confined to woods.

As a tree, the hawthorn will attain a height of 40 feet; but it branches so profusely that it often becomes just a tangled mass. The bole, when old, becomes very gnarled. The twigs bear very prominent sharp thorns which are really lateral branches as is evidenced by the fact that they are borne in what were formerly leaf-axils, and even themselves



Harold Bastin

OLD HAWTHORNS ON A HILL-TOP IN EARLY WINTER

sometimes bear leaves and, now and then, bunches of flowers. The buds are small and arranged on the stem in a spiral fashion.

To the pea family (LEGUMINOSAE, Dicot.) belong several trees, none of which is native to Britain; but two, namely laburnum (known locally as golden chain, golden rain and watch-and-chain) and false acacia or locust, are so commonly seen in parks (the former is also a great favourite in even the smallest gardens) that we cannot ignore them altogether.

The laburnum (*Laburnum anagyroides*) is a comparatively small tree, seldom growing more than 20 feet high. The bole branches out into an unshapely crown formed by irregular branches. The greenish bark is smooth (p. 61). The twigs display very pronounced scale-scars. The spirally arranged winter buds are green in colour, fairly large and squat with loosely fitting protective bud-scales.

The locust or false acacia (*Robinia pseudacacia*) was mistaken for the true *Acacia* when it was first introduced into Europe, hence the present addition of the word 'false' and the specific Latin name. The North American missionaries mistook the tree for the plant whose fruits were the locusts of John the Baptist's diet when he was in the desert. This explains the alternative common name.

The false acacia is a fairly large tree, attaining a height of anything from 40 to 80 feet. It is very irregular — the trunk seldom straight and the branches tortuous. The brown bark is deeply fissured and frequently assumes a spiral twist (p. 60). The twigs are rather thin, dark-brown in colour and prominently ridged. The buds are particularly small and each is almost surrounded by a leaf-scar. On each side of it is a prominent woody spine. These spines are actually the modified stipules which the fallen leaf has left behind.

Other trees belonging to the pea family, which are cultivated in this country for ornamental purposes only, are: *Wistaria* (usually trained as a climber over the fronts of buildings, though sometimes trained as a standard weeper), Indian laburnum (*Cassia fistula*), honey locust (*Gleditsia triacanthos*), Judas tree (*Cercis siliquastrum*) and Japanese pagoda tree (*Sophora japonica*).¹ There are others too, but none is sufficiently common to warrant attention here.

To the family CORYLACEAE, Dicot. belong the familiar hazel and the less familiar hornbeam.

The hornbeam (*Carpinus betulus*), known locally as yoke-clm, was at one time an important forest tree in Britain. It is not a large tree, averaging 45 feet in height, though it might reach 70 feet. The trunk is very irregular and curiously flattened so that in cross-section it is elliptical. There is very little bole, for the trunk soon branches out into

¹ *Trees in Britain*, by L. J. F. Brimble, pp. 189-194.



Harold Bastin

HORNBEAM IN WINTER



T. Edmondson

HAZEL IN WINTER

a large number of primary branches which grow up obliquely to give a heavy crown. The grey bark is fairly smooth though slightly fissured (p. 61). The winter buds are rather long and pointed and are curiously bent. The wood is exceptionally tough, but its uses are now limited, though it makes a good fuel.

The hazel (*Corylus avellana*) is not often seen as a tree for it produces suckers prolifically. Furthermore, since it frequently grows in hedges and copses it is often subjected to cutting and coppicing, and then sends up very straight branches.

As a tree it seldom grows more than 12 to 20 feet high. The bark of the older branches and the trunk (if present) is brown, patched with grey. The twigs are hairy and carry alternately arranged, almost spherical buds. But there is no mistaking the hazel even in January for there are sure to be some young catkins present.

Among the birches (BETULACEAE, Dicot.) which grow in Britain today, the silver birch (*Betula alba*) is the most common. Frequently growing with it, however, particularly in the north, is another species, *B. pubescens*.

The silver birch is the most graceful of all our trees — the 'lady' of the poets (Coleridge's "Lady of the Woods", J. R. Lowell's "most shy and ladylike

of trees", V. Sackville-West's "lovely women rooted into trees"). It will grow in diverse situations — towns, meadows, woods, and even on the exposed Highlands of Scotland. It averages 50 feet in height, though it often exceeds this. It stands out conspicuously since the silvery bark of the tree periodically peels off in horizontal layers. As the tree gets older, the bark, especially towards the base of the bole, loses its silvery sheen and effects a drabness which is enhanced by many fissures (p. 60). *B. pubescens* has a much whiter bark and is a taller tree altogether.

The winter twigs of *B. alba* are hairless but warty, and bear small pointed buds arranged in a spiral fashion. The main differences between *B. alba* and *B. pubescens* are as follows: the winter twigs of the former bear prominent warty outgrowths, whereas those of the latter do not; the twigs of the former are smooth, those of the latter are covered with down; the terminal branches of the former are more pendulous.

Belonging to the same family as the birches (BETULACEAE, Dicot.) is the common alder or aller (*Alnus glutinosa*) which flourishes along riverbanks and in marshy copses (p. 78). This tree attains a height of 30 to 40 feet, and though it sometimes displays a pronounced black trunk with uneven bark (p. 61), it is so prone to sending up suckers that the main trunk eventually becomes lost. Furthermore, the whole tree is frequently coppiced, and then there is no main trunk.

The winter twigs of the alder are very diagnostic for the tree. They are vertically ridged, and the spirally arranged buds are large, ovoid, deep red in colour and, though borne on short stalks, adpressed to the stem. The alder is also easily identified since old pendulous female cones usually remain on the tree throughout the winter.

The walnut (*Juglans regia* of the family JUGLANDACEAE, Dicot.) is never found growing wild, but it is so familiar today, since its introduction by the Romans, that it cannot be ignored. It is a beautiful tree attaining a



T. Edmondson

BIRCH IN WINTER



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ALDER IN WINTER

height of 100 feet or more. There is a characteristic smell about the tree, even during winter. The bark is grey in colour and deeply fissured (p. 60). The enormous primary branches curve upwards and outwards to give a handsome, almost cubical crown. The winter twigs cannot be mistaken. They are grey and smooth with conspicuous lenticels. The small, spirally arranged buds are subtended by very conspicuous leaf-scars.

The tulip tree (*Liriodendron tulipifera*) is not native to Britain: it comes from the United States where, especially in the eastern regions, it thrives under the name of yellow poplar or white-wood. It belongs to the magnolia family (MAGNOLIACEAE, Dicot.). It is frequently seen

in gardens and parks, mainly in the south. The bole is straight and pronounced and is covered with a slightly fissured grey bark. The bole bears large branches which support a large, oval crown. The spirally arranged winter buds are long and pointed and each is borne on a short stalk. There are two protective scales.

The tree of heaven or tree of the gods (*Ailanthus glandulosa*), a tree very prominent in certain parks and gardens, especially in the south, belongs to the family SIMARUBACEAE, Dicot. — mainly a tropical family. It is also called Chinese sumach. It is a handsome tree with gracefully curving branches. The bark is smooth with vertical fissures. Though the winter buds are very small, the leaf-scars are prominent.

The spindle tree (*Euonymus europaeus*), of the family CELASTRACEAE, Dicot., usually takes the form of a bush in Britain, though some quite tall trees are to be seen, especially in south-east England. The bark is smooth and greyish. The youngest twigs are ribbed with tissues of cork giving a four-angled effect. The buds are borne in opposite pairs, consecutive pairs being in planes at right angles to each other. The spindle is sometimes called dogwood, which is a pity, for there is another dogwood (p. 280); it is also known locally as pegwood, prickwood and skewerwood.

Three buckthorns (RHAMNACEAE, Dicot.) are to be found in Britain, though only one, the purging or cathartic buckthorn (*Rhamnus catharticus*), is at all common. It will attain a height of 10 feet in hedges on those limy soils where it thrives best. The black bark is thin and if scraped away will disclose bright red layers beneath. The fairly robust buds are borne in pairs, each adjacent pair being at right angles to the next pair. There are few thorns, though some of the smaller lateral branches may be modified as such.

Alder buckthorn or berry-bearing alder or black alder (*R. frangula*), which does not thrive on limy soils, is by no means so common as the purging buckthorn. It is an even smaller tree. The twigs are somewhat hairy and even less thorny than those of the purging species. The buds, too, are more evenly and widely spaced.

Then there is the sea buckthorn (*Hippophae rhamnoides*), but that belongs to a different family, ELAEAGNACEAE, Dicot., and in any event is only a small shrub of the east and south-east coasts.

To the elder family (CAPRIFOLIACEAE, Dicot.) belong three small trees, namely, elder, wayfaring tree and guelder rose, though there are many other members of the family.

The elder (*Sambucus nigra*) assumes the habit of a tree, 10 to 20 feet high, when growing in woods, but it is shrubby when in hedges or on exposed sites. On older trunks the bark becomes very rough; on the younger branches and the twigs it is smooth with very conspicuous lenticles. The twigs themselves are ridged. The oppositely placed buds are subtended by pronounced leaf-scars, and they are protected by loose bud-scales.

The wayfaring tree (*Viburnum lantana*) is an inhabitant of woods on limestone and chalky soils. It usually assumes the habit of a shrub, but will sometimes grow into a tree 15 feet high. It is easily recognised in winter because its buds (which are arranged in opposite pairs at right angles to each other) are long and thin and they have no protective



Harold Bastin

WALNUT IN WINTER

THE FLORAL YEAR



Harold Bastin

LARCHES IN WINTER

scales. The terminal bud in particular will show the unprotected leaves exposed.

The guelder rose (*V. opulus*) is almost invariably shrubby in habit. Each winter bud is enveloped in one protective bud-scale only.

Most coniferous trees in Britain are evergreen. The only common British conifer which is deciduous is the larch, though the marsh cypress (which is not so common, though it is frequently cultivated) is another.

In spite of the fact that so many writers and poets seemed to dislike the larch (*Larix decidua* or *europaea*) (like Wordsworth who loathed it), many people think it a beautiful tree. Its pyramidal shape and lateral

branches borne in whorls are very attractive. The branches emerge horizontally, then droop and eventually curve upwards at their tips. This tree attains a height of anything from 80 to 140 feet. The dull-red bark becomes fissured in older trees. Frequently on the older twigs old cones may be seen.

This brings us to the end of a rather barren month so far as the flower lover is concerned. Nevertheless, those who have studied deciduous trees in their winter habit will not have wasted their time. The floral aspect of these trees must be left to their appropriate seasons; so, too, must the study of their foliage and leaf-fall be deferred. Few keen observers could spare any more time during this month, so the evergreens must be deferred until the winter months which come at the end of the year, though even some of these will also be mentioned in their floral seasons.

The diagnostic features of a deciduous tree in winter are: twig and winter buds, bark and branching. All these are fairly easily drawn, so now is the time to practise sketching.

Like Tennyson, most of us at this time of the year are looking forward impatiently to those months when the "flowery way" is surely a rich multi-coloured carpet; February and March will gradually break us in for that.

JANUARY

Dip down upon the northern shore,
O sweet new-year delaying long ;
Thou doest expectant nature wrong ;
Delaying long, delay no more.

What stays thee from the clouded noons,
Thy sweetness from its proper place ?
Can trouble live with April days,
Or sadness in the summer moons ?

Bring orchis, bring the foxglove spire,
The little speedwell's darling blue,
Deep tulips dash'd with fiery dew,
Laburnums, dropping-wells of fire.

O thou, new-year, delaying long,
Delayest the sorrow in my blood,
That longs to burst a frozen bud
And flood a fresher throat with song.

In Memoriam : TENNYSON

PART III

FEBRUARY

So, in a single night,
Fair February came,
Bidding my lips to sing
Or whisper their surprise,
With all the joys of spring
And morning in her eyes.

February: FRANCIS BRETT YOUNG

FEBRUARY is not blossom time, but it is nevertheless a month of promise. Much depends on our uncertain weather, but given some fine days — not an unreasonable wish this month — there is much to interest the botanist and not a little to intrigue the lay Nature lover. The Anglo-Saxons called February *sprout-kale*, for now the spring greens are beginning to sprout in the garden. But alas! along might come the frosts and then the greens suffer. Another Anglo-Saxon name was *sol-monat*, referring to a possible increase in sunlight and heat. Farmers prefer to see snow during February, for it is better for the crops which are to follow. They do not like too much rain or unseasonable warmth at this time of the year.

But, frosts or no frosts, there are some blooms of promise which we can confidently expect to see at this time — the snowdrop flower and the hazel catkin: others might appear if the weather is favourable and the site sheltered.

I have in my heart a vision of spring begun
In a sheltering wood, that feels the kiss of the sun:
And a thrush adareth the melting day that dies
In clouds of purple afloat upon saffron skies.

The Months: R. BRIDGES

Colt's foot and the lesser celandine are quite likely to burst in upon us this month; but since they are both certain to be more in evidence in March they will be left for study until then. The same may be said of the butcher's broom, at any rate in the southern parts of England. The willow or goat willow is also beginning to break its buds to expose those female catkins which will be such a blaze of gold later on. But it would be unwise to assume that all those blooms will greet us during February, for we must be prepared for all sorts of climatic conditions and also recognise that the north is seldom if ever so forward as the south. Here we will restrict ourselves to the certainties.

WOODS AND COPSES

HERBS AND SHRUBS

IN many an open damp wood and copse, sometimes in more exposed fields where the grass is long, and certainly in gardens, the first and most welcome flower of the year is usually the snowdrop. But then in most parts the plants have been at least given a start by some appreciative person who planted the first bulbs which increased each year afterwards: these are not wild. Yet in certain places, mainly in the west of England, the snowdrop grows wild and thrives in open woods and thickets.

Brother, joy to you!
I've brought some snowdrops; only just a few,
But quite enough to prove the world awake,
Cheerful and hopeful in the frosty dew
And for the pale sun's sake.

The Months: a Pageant (February): CHRISTINA ROSSETTI

Having arrived in February, snowdrops continue into the month of April. During most of this time the pendulant, pure white blooms are an encouraging, indeed a rousing, sight; then many a poet has been stimulated in producing lines of reverence or cheer (*Plate 1*).

Chaste Snowdrop, venturous harbinger of Spring,
And pensive monitor of fleeting years!

To a Snowdrop: WORDSWORTH

Close to the soil there can be seen
A thought of God in white and green . . .
It is so holy and yet so lowly.

The Snowdrop: ANNA B. DE BARY

The snowdrop is a member of the daffodil family, AMARYLLIDACEAE, Monocot., though, unlike the daffodil (p. 110), it has no corona or trumpet. It belongs to the genus *Galanthus* (from the Greek *gala*, milk, and *anthos*, a flower). There are about half a dozen European species of the genus; the British species is *G. nivalis* (the specific name being Latin for living among snow). The plant is a perennial, and it tides itself over the rest of the year by means of its bulb.

In February two green leaves emerge from the waking bulb. These are blade-like in shape, each having a pronounced midrib which ends at the tip in an almost white apex, so well described by that observant lover of gardens and Nature, V. Sackville-West:

THE FLORAL YEAR

And snowdrops that increase each year,
Each leaf so tipped with white
As though it too desired to bear a flower.

The Garden: V. SACKVILLE-WEST

The two leaf-blades enclose for some distance the delicate stalk which bears the drooping white flower. The latter is subtended at the tip by a membranous sheath.

The most conspicuous part of the flower is the three outer perianth segments which are snow-white and boat-shaped. Within this whorl of three is another whorl of three segments which alternate with the outer ones. These also are white, but on the inner surface of each are two green spots which are nectaries secreting nectar to attract insects. This calls to mind Goldsmith's remark on the early-flowering gorse (p. 94), for such nectaries are really an unprofitable gaiety; there are no insects about at this time of the year, so the snowdrop must resort to self-pollination. There are six stamens and an ovoid ovary with a simple style. The fruit is a capsule, but since even self-pollination is not often effected, this does not often appear. For multiplication the plant depends to a considerable extent upon its bulb, so snowdrop seeds are very uncommon.

It is probable that this very lovely flower was first of all introduced into Britain by various religious orders and then cultivated for use on the festival of the Purification of the Blessed Virgin which falls on February 2. There is an old legend that an angel appeared before Eve after her transgression in the Garden of Eden and breathed upon snowflakes as they fell. When the angel had disappeared pure white snowdrops were growing where he had been standing.

To the old herbalists the snowdrop was known as bulbous violet. Among other local common names are Candlemas bell, white lady, snowflower and fair maid of February. Among the several picturesque common names in other languages are the French *perce-neige* (pierce snow), German *schneeglöckchen* (snow bell), Italian *lacrime della madonna* (tears of the Madonna).

The snow is thawing, the sky overcast, not a single cheering sunbeam; yet one snowdrop has ventured forth, and there it stands, alone in its purity, with drooping head, and petals not unfolded, modest, patient, unobtrusive, yet calm and serene, as if assured of victory over storm and cloud . . . this fair one, apparently as tender as a maiden, through some unseen strength can brave the rigour of the time. We hail it as the herald of deliverance, the foremost of our long-lost friends. . . . In this solitary coming forth, which is far more beautiful when we chance to see it thus amidst the melting snow, rather than on the dark bare earth, the kind little flower, however it may gladden us, seems to wear an aspect almost of sorrow. Yet wait another day or two till the clouds have broken. And its brave hope is accomplished and the solitary one has become a troop, and all down the garden amongst the shrubs the little white bunches are dancing gaily in the breeze. Few flowers undergo such striking change of aspect, so mournful in its early drooping, so gladsome when full-blown and dancing in the sunshine.—

FORBES WATSON.

FEBRUARY

In the undergrowth of woods and copses, sometimes also in hedges, the curious spurge laurel is now in flower. But it is not to be found everywhere, for it is rather localised. It is of shrubby habit, growing to a height of two to four feet. This unusual plant belongs to the family THYMELAEACEAE, Dicot., which is a unique family, not closely related to any other, but widely distributed, especially in tropical Africa. The spurge laurel belongs to the genus *Daphne*. (After the Greek for laurel). (The god Apollo, who was in love with Daphne the daughter of Peneus, once chased her, but Peneus came to her aid and changed her into a laurel tree. The foliage of spurge laurel closely resembles that of the true laurel.) The genus *Daphne* is a fairly large one. Spurge laurel is *D. laureola*, and belonging to the same genus is mezereon or mezereum (*D. mezereum*). The former specific name is a diminutive of *laurus* meaning a little laurel; the latter is derived from the Persian *mazaryum*, spurge olive. Mezereon is but very rarely found growing wild, though it is sometimes cultivated because its flowers have a peculiar sweet perfume. Indeed, so also have those of the spurge laurel when the weather is warm.

Spurge laurel is in flower during the months of January to April, though it is usually at its best in February. Mezereon blooms from January to May. The leaves of both plants are large, lance-shaped and alternately arranged. Spurge laurel is evergreen; mezereon is deciduous.

The month of February is certainly not one of colour, and neither spurge laurel nor mezereon help matters, for the flowers of the former are green whereas those of the latter are a dull purple. They hang in bunches; many flowers to each bunch in spurge laurel, but only three in mezereon. Each flower has a tubular calyx composed of four sepals. There are no petals, but eight stamens. The single carpel eventually ripens to form a black berry which is poisonous.

The three plants of the undergrowth of woods, namely, snowdrop, spurge laurel and mezereon, are the only ones which will with any degree of certainty be found blooming during the month of February; but attention must be directed to winter aconite — a favourite



Ernest G. Neal

SPURGE LAUREL

THE FLORAL YEAR

yellow garden flower which now seems to have become naturalised in certain thickets and woods. It belongs to the buttercup family (RANUNCULACEAE, Dicot., p. 229, and has been assigned to a genus of its own — *Eranthis hyemalis*. Though the common name is quite definite about the season of flowering of this plant (it might bloom so early as January), its botanical names are more revealing; *Eranthis* is from the Greek *er*, spring, and *anthos*, flower, whereas *hyemalis* embraces the Latin *hiems*, which means relating to spring. Actually the plant might bloom at any time during January to April, thus passing from one season to the next.

Winter aconite is a perennial having a fleshy rhizome by means of which it rests in the soil and also spreads. The glossy expanses of the leaves which grow from the ground-level are round but deeply indented and their long stalks join the blades near the centres of the latter. On the flower stalk, just below the solitary flower, are two large, green, stalkless, lobed bracts, as in the anemone, another member of the same family (p. 104), though here there are three. The conspicuous, pale-yellow organs of the flower are not the petals but the sepals. There are five to eight of them and they have become petaloid — a not uncommon feature of this family. The petals themselves are very small and two-lipped and are shorter than the stamens of which there are many. The ovary is composed of about half a dozen carpels which, after fertilisation,



Harold Bastin

WINTER ACONITE

develop into dry follicles very like those of other of this plant's relatives, such as marsh marigold, columbine and monk's hood.

Flower, that foretell'st a Spring thou
ne'er shalt see,
Yet smilest still upon thy wintry day,
Content with thy joy-giving destiny,
Nor envying fairer flowers their festal
May, —
O golden-chaliced Aconite!

THOMAS NOEL

A FEBRUARY TREE

Just now, if we look upwards, we shall certainly not miss the hazel catkins. (These may also be found in hedge-rows.) Unless February is dying out, the catkins may still be firm, dull grey and erect as they are throughout the winter months. But at the end of February and well into March, sometimes indeed on into May, these catkins, which are really the male inflorescences, will have matured and become the lovely, pendulant 'lambs' tails' which we all prize so much during these lean weeks in the floral year (*Plate 1*).

The catkins from the hazel swung
When you and I and March were
young.

Envoi: V. SACKVILLE-WEST

In the wind of windy March
The catkins drop down,
Curly, caterpillar-like,
Curious green and brown.

The Year's Windfalls:
CHRISTINA ROSSETTI



HAZEL CATKINS

T. Edmondson

The hazel (*Corylus avellana* of the family CORYLLACEAE, Dicot.) in its winter garb has already been described (p. 76); but even in the flowering

THE FLORAL YEAR



HAZEL FLOWERS

Left, male catkins; *above right*, bunch of female flowers; *middle right*, scale bearing two female flowers; *below right*, male bract bearing two bracteoles, each subtending four stamens

stage it is still leafless, for it is one of those trees which bloom before their leaves appear. The generic name is probably a corruption of the Greek *karyon*, nut, or it may be derived from the Greek *korys*, hood, referring to the cupule enclosing the nut (p. 573); the specific name is after Avella, a town in Campania, where the plant was much cultivated.

The lamb's-tail catkins are about two inches long and are borne on the twigs in groups of two to four. Each bears a host of male flowers (for the hazel is unisexual, though both sexes appear on the same plant). Each male flower is composed of a bracteole which subtends four stamens. The female flowers are not borne in catkins but in erect lateral structures, ovoid in shape, from the tips of which the red styles emerge.

The hazel blooms in threads of crimson hue
Peep through the swelling buds and look for Spring.

J. CLARE

Each ovoid structure is composed of boat-shaped pointed bracteoles, each of which subtends two female flowers. The flower is composed of an ovule surrounded by an involucre of small bracts and bearing two long red styles. After fertilisation it is this involucre which develops to enfold the nut (p. 573).

The hazel is wind-pollinated, so many more male flowers than female flowers are produced. Then when the flowers are ripe, and if it is a fine, dry day, the pollen is shed in veritable yellow clouds, and some of it is caught on the sticky stigmas of the styles of the female flowers.

Yet through the gray and sombre wood,
Against the dusk of fir and pine,
Last of their floral sisterhood,
The hazel's yellow blossoms shine,
The tawny gold of Afric's mine!

Small beauty hath my unsung flower,
For spring to own, or summer hail;
But, in the season's saddest hour,
To skies that weep and winds that wail
Its glad surprisals never fail.

J. G. WHITTIER

FEBRUARY

OTHER FLOWERS WHICH MAY APPEAR IN WOODS AND COPSES DURING FEBRUARY

(The number following each flower is the page on which it is mentioned or described)

Bear's foot, 114

Butcher's broom, 118

Cinquefoil, Strawberry-leaved, 124

Elm, Common, 92

Elm, English, 92

Green hellebore, 114

Stinking hellebore, 114

Strawberry, Barren, 123

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HEDGES AND BANKS

A FEBRUARY HERB

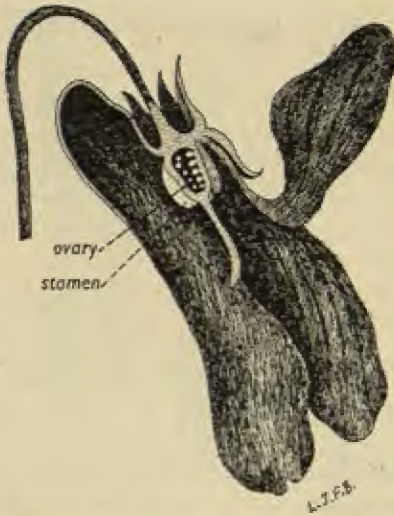
IT is too early in the year for spring's awakening in the hedgerow itself. Most of the shrubs and coppiced trees which go to make up the typical hedge are still bare, though some winter buds are swelling, a few even beginning to burst into leaf. But in the undergrowth of the hedge and on the hedge bank (if there is one) life is already teeming. The young



WHITE SWEET VIOLET

Ernest G. Neal

THE FLORAL YEAR



SECTION OF A VIOLET FLOWER

leaves of primrose, cuckoopint, barren strawberry, stinging nettle and so forth are now growing vigorously, though few of these plants are yet in flower. Only one plant has reached maturity, shyly hiding its full-blown blooms, and that is the sweet violet.

Of the several species of *Viola* native to Britain, the lovely sweet violet (*V. odorata*) is the first to present its blooms. The generic name seems to be related to the Greek *ion*, a violet; the meaning of the specific name is obvious. Though this plant frequently flowers in January (especially if the hospitality of a sheltered spot in a garden has been extended to it), it does not often bloom before February in the wild state, and then it goes on pro-

ducing flowers until some time in April. The genus belongs to the family VIOLACEAE, Dicot. — a family which is rather cosmopolitan in its distribution.

There are several colour-varieties of the sweet violet, but the most frequent are white, purple and blue (*Plate 1*)—white being predominant in the wild. The plant will be found growing on banks and especially in hedgerows where it can enjoy a reasonable amount of shade. It is a lowly plant, seldom growing more than five inches high, often less, and frequently secluded and hidden from view by the more robust and persistent vegetation around it. It is a perennial: in fact, with the exception of one rare biennial, all violets are.

A violet by a mossy stone
Half hidden from the eye!
—Fair as a star, when only one
Is shining in the sky.

She Dwelt among the Untrodden Ways: WORDSWORTH

A violet in the youth of primy nature,
Forward, not permanent, sweet, not lasting,
The perfume and suppliance of a minute;
No more.

Hamlet, Act I, Sc. 3: SHAKESPEARE

The leaves are heart-shaped, but after the flowers have died down they become larger and more pointed at their tips.

The flower is irregular and is composed of five, backwardly projecting sepals, five petals (two at the top, one on each side and one at the bottom,

the last-named having the characteristic spur), five stamens and three united carpels. At the base of the spur is a nectary, so only bees and other long-tongued insects are able to reach it. This means that the sweet violet takes a grave risk of not being pollinated at all, for such insects are not usually in action at this time of year. But there is an insurance against this risk in the form of what are called cleistogamic flowers. These usually appear several weeks after the barren flowers have withered away. Cleistogamic flowers never open out from their buds, so when their stamens are ripe the pollen, shed within the tight bud, is forced into contact with the stigma of the same flower. Thus pollination, and consequent fertilisation, take place. The resulting fruit is a three-valved capsule (p. 33).

But violets also have a vegetative means of reproduction. In some species it is effected by means of thick root-stocks. In the case of the sweet violet, however, the organs used for this purpose are stolons (p. 15).

Unlike the dog violet (p. 153), the sweet violet is delicately perfumed. Like some of its more glamorous cultivated relatives it is frequently regarded as the emblem of love.

Love in such thoughts forever freshly flowers.
They neither ask nor answer, only give
Their charm up to the kind and unkind hours,
Born of that beauty in whose light we live,

Whose grace is past all probing of our wit
And sweetens even the hand that bruises it.

Violets: LAURENCE BINYON

On the other hand, many poets have associated the violet with death. For the funeral of Lycidas, Milton would have the violet, and on several occasions Shakespeare referred to this sombre significance of the violet. Ophelia, in her madness, sang:

I would give you some violets, but they withered all when my father died.—
Hamlet, Act IV, Sc. 5: SHAKESPEARE

And when she herself was buried Laertes bade:

Lay her i' the earth:
And from her fair and unpolluted flesh
May violets spring!

Hamlet, Act V, Sc. 1: SHAKESPEARE

Again, Marina, mourning for Lychorida, cried:

No, I will rob Tellus of her weed,
To strew thy green with flowers: the yellows, blues,
The purple violets, and marigolds,
Shall as a carpet hang upon thy grave.

Pericles, Act IV, Sc. 1: SHAKESPEARE



Ernest G. Neal

ELM TWIG IN FLOWER

The violet has frequently figured in old herbals. For centuries it has been recommended as a cure for headaches, and its leaves were once used to alleviate the pain caused by cancer, just as the flowers of red clover were. Violet roots were sometimes used as a purgative for adults and the flowers as a laxative for children. The scented forms of both white and blue violets are 'crystallised' and used as a confection (p. 154).

TREES

Throughout Britain the elm tree (ULMACEAE, Dicot., p. 62) grows. The common or English elm (*Ulmus procera*) in its winter dress has already been described (p. 62); but now it is begin-

ning to bloom (if it is more than thirty years old), and those trees which tower so frequently from the hedgerows, and the few others from the woods, are already beginning to present a few flowers, for the leaves have not yet broken bud. Elms are not usually gregarious, though groups of them sometimes occur.

The wych elm (*U. glabra*) is not so common as the English elm (p. 62); it is seen more frequently in parks and on estates. Then there are other rarer elms.¹

This is the month to look closely for the red flowers on elm twigs. The flowering season ranges from February to May.

The individual flowers of the elm are so small that perhaps one can understand Bacon, who wrote in his *Sylva Sylvarum* that the elm has no flowers; but one cannot forgive him for saying that neither has it any fruit, for in May and June these are very obvious to anyone who cares to examine a few twigs, though the seeds are seldom, if ever, viable. Perhaps Bacon was aware of this fact. It is strange that, though we never see elm seedlings in Britain, the elm in the United States is prolific and its seeds are viable, with the result that elm seedlings are perfect pests in gardens and on agricultural land.

The flowers are produced in tufts on the otherwise bare twigs. In each flower four or five sepals form a cup, toothed at the tip according to

¹ *Trees in Britain*, by L. J. F. Brimble, p. 277.

FEBRUARY

the number of sepals present. There is a corresponding number of stamens, and the ovary has two styles. The sterile fruits develop during May or June, which is very early for a tree in this country. Each fruit takes the form of a samara, about three-quarters of an inch long, which bears a single seed at its centre.

On the continent of Europe the elm is used as a support for grape vines. For this purpose, the tree must be carefully pruned. This 'marrying' of the elm to the vine has been referred to frequently in literature. Even so far back as the sixteenth century, Spenser in his *Faerie Queene* referred to "the vine-propp Elme", and later Milton wrote:

They led the Vine
To wed her Elm. . . .
Paradise Lost: MILTON

Shakespeare uses the metaphor through Adriana speaking to Antipholus of Syracuse:

Thou art an elm, my husband, I a vine,
Whose weakness married to thy stronger state
Makes me with thy strength to communicate:
If aught possess thee from me, it is dross,
Usurping ivy, brier, or idle moss:
The Comedy of Errors, Act II, Sc. 2: SHAKESPEARE

OTHER FLOWERS WHICH MAY APPEAR IN HEDGES DURING FEBRUARY

(*The number following each flower is the page on which it is mentioned or described*)

Celandine, Lesser, 154	Deadnettle, White, 222
Cinquefoil, Strawberry-leaved, 124	Hazel, 87
Strawberry, Barren, 123	Mezereon, 85
Dandelion, 128	Spurge laurel, 85

9

OPEN SPACES

SHRUBS

THE open spaces of meadows, cultivated fields, commons, heaths and hillsides are too exposed to the harsh elements of February to offer many flowers. Yet there are some — mainly those very hardy individuals which enjoy an unusually long flowering season.

THE FLORAL YEAR

All the year round there are some golden blooms on the gorse — sometimes only one here and there in unkind December, then masses during the two maximum flowering seasons of February to May and August to September. It must never be otherwise, for “when the gorse is out of bloom, kissing’s out of fashion” (*Plate 1*).

So now is the time to examine this shrub which is so common throughout the length and breadth of the land (with the exception of the bleak northern Highlands) — on heaths, hillsides, commons and embankments. It is also known as furze and whin. Though it is not a handsome shrub, it is certainly a striking sight when in full golden bloom; in fact, as Johns wrote: “Perhaps no plant is so broadly characteristic of English scenery, and the English climate, as ‘Yellow Whin’”. Even the great Linnaeus had not seen gorse before he visited England, and it is said that when he set eyes on it blooming in a typically English setting he fell on his knees in thanks to Almighty God. It is strange that gorse persists in flowering at all times of the year, for it is an insect-pollinated plant, so there must often be times when it is “unprofitably gay”:

Beside yon straggling fence that skirts the way,
With blossom’d furze unprofitably gay.

The Deserted Village: GOLDSMITH

The gorse shrub usually grows two to six feet in height, though I have seen examples twelve feet high. Except in its seedling stage,¹ there are no foliage leaves. They have all become modified into spines and these even subtend other spines which bear still more spines. So here we have a complicated system of leaves and axillary branches all modified into spines. And sharp spines they are — efficient protection against browsing animals and marauding man. Such modification also reduces the surface area of the leaves, thus effectively controlling loss of water by transpiration — for water-loss must be reduced in a plant such as this, growing as it does on dry, exposed sites. The very spiny nature of this plant is reflected in its generic name, *Ulex*, which may be derived from the Greek *oulos*, meaning dense or intricate, or still more likely has it come from the Celtic *uile-ex*, meaning all prickles.

Thorny furze hills should ne’er be trod
With legs unguarded and feet unshod.

THEOCRITUS (translation by FRANCIS FAWKES)

Plutarch noticed the protective nature of the spines of gorse and how they repelled people from picking sprays of it.

We must not alwaies choose that which is easie to be had and willing to be gotten, for we put by gorse and furzen bushes, we tread underfoot briers, though they catch hold of us.—PLUTARCH (translation by PHILEMEN HOLLAND)

¹ *Flowers in Britain*, by L. J. F. Brimble, p. 149.

In its flower, the gorse is very typical of the pea family (LEGUMINOSAE, Dicot.) of which it is a member. This cosmopolitan family is a very large one. Gorse belongs to the genus *Ulex*, three of whose species are represented in Britain, though *U. europaeus* (gorse) is by far the most common. The other two are restricted to certain areas only: the western gorse (*U. gallii*) to the west of England, and the small or dwarf gorse (*U. minor*) to the south and east.

The flower is very irregular (p. 22). The calyx is really made up of five sepals, but these have become fused into two segments to such an extent that not even the teeth are visible. These two segments are yellow and are covered with black hairs. At the bases of the segments are two small bracts. The corolla is papilionaceous and all ten stamens are united (p. 25).

The ovary is a single long carpel with a simple style at the end of it. It contains several ovules in a row. This



GORSE, SHOWING SPINES AND FLOWERS

Top left, section of flower; bottom right, pod opening to release seeds

HERBS

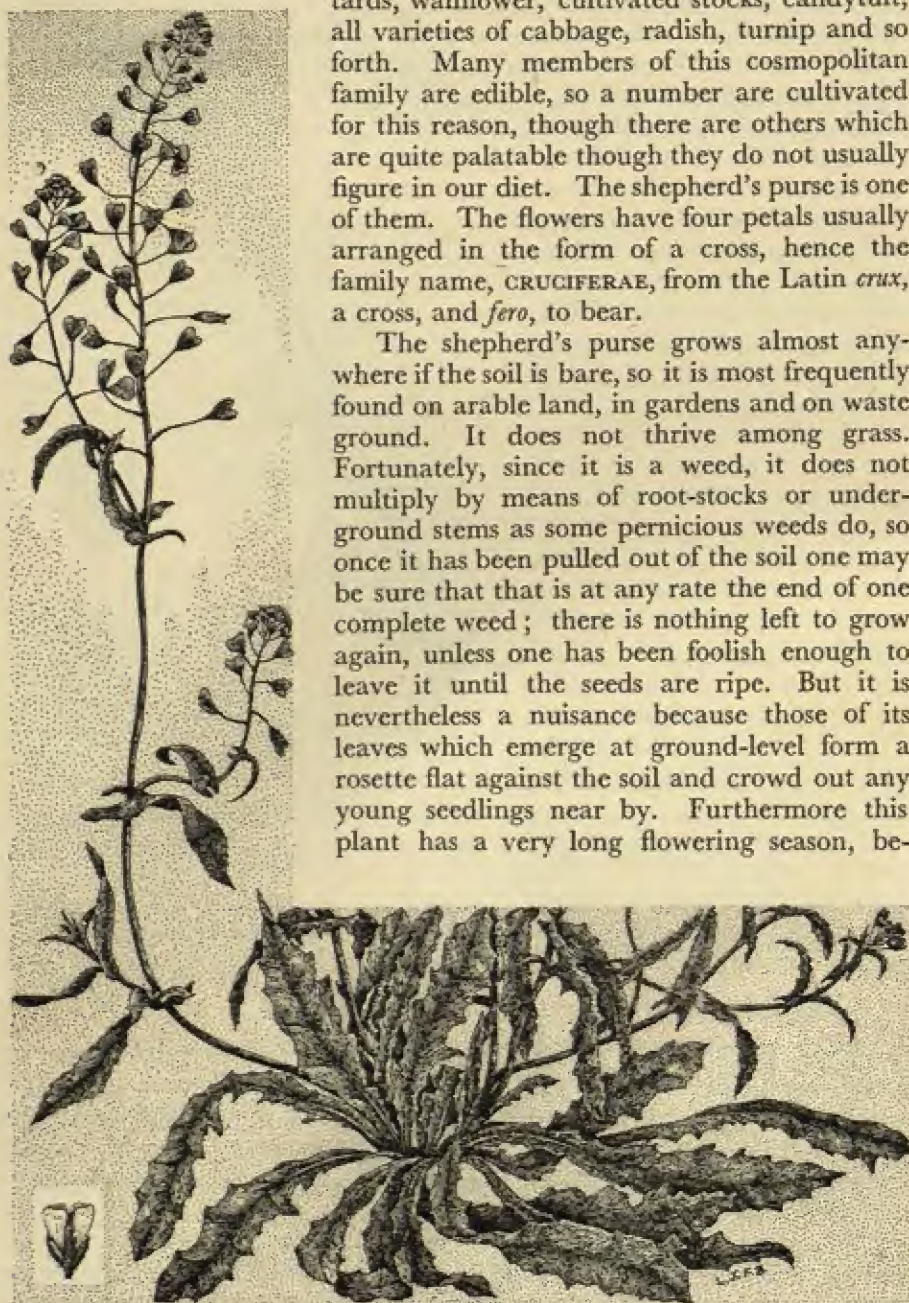
Three plants, which are all too familiar as weeds in gardens and on arable land, are in flower this month, and, alas, for many months to come. They are shepherd's purse, groundsel and small chickweed. But apart from their short-comings as weeds their appearance at this time of the year, and together, is opportune for the keen botanist, because they are all typical members of different well-known plant families.

The shepherd's purse is a member of the wallflower family (CRUCIFERAE, Dicot.) — a very important family because so many familiar wild, ornamental and economic plants belong to it. There are, for example, the

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SHEPHERD'S PURSE

Bottom left, flower enlarged



cuckoo flower, bitter-cresses, rock cresses, water cress, hedge mustard, white and black mustards, wallflower, cultivated stocks, candytuft, all varieties of cabbage, radish, turnip and so forth. Many members of this cosmopolitan family are edible, so a number are cultivated for this reason, though there are others which are quite palatable though they do not usually figure in our diet. The shepherd's purse is one of them. The flowers have four petals usually arranged in the form of a cross, hence the family name, *CRUCIFERAE*, from the Latin *crux*, a cross, and *fero*, to bear.

The shepherd's purse grows almost anywhere if the soil is bare, so it is most frequently found on arable land, in gardens and on waste ground. It does not thrive among grass. Fortunately, since it is a weed, it does not multiply by means of root-stocks or underground stems as some pernicious weeds do, so once it has been pulled out of the soil one may be sure that that is at any rate the end of one complete weed; there is nothing left to grow again, unless one has been foolish enough to leave it until the seeds are ripe. But it is nevertheless a nuisance because those of its leaves which emerge at ground-level form a rosette flat against the soil and crowd out any young seedlings near by. Furthermore this plant has a very long flowering season, be-

ginning sometimes in January, certainly in February, and not ending until November, maybe even December.

A weed can best be described as a plant which grows where it is not wanted or is proving to be a nuisance. Various methods, chemical, physical and others, are used for getting rid of such pests; but all too frequently the only effective means is to remove each plant separately. The shepherd's purse is a case in point.

Of course, though weeds are usually cursed and roughly treated, we must not ignore other possibilities — a point raised by Emerson :

What is a weed? A plant whose virtues have not yet been discovered.—
Fortune of the Republic: EMERSON.

This weed seems to thrive in almost every part of the world, but varies in size and proportions according to the conditions under which it grows. In Britain it varies in height from six to eighteen inches though it will sometimes exceed even two feet. Almost the whole of the plant is covered with small, coarse hairs. The leaves of the ground-level rosette are very deeply segmented; those borne in an aerial position on the stems are lance-shaped and only slightly toothed, if at all.

The small white flowers are borne in large numbers in racemes at the tops of the stems. They are rather small so they will not be examined in detail. (In general structure and number of parts they closely resemble the wallflower, p. 182.) The small white petals are typically cruciform. The plant is self-pollinated.

The most interesting part of the shepherd's purse is its fruit which, in fundamentals, is typical of the family, though in general shape unusual. It is a heart-shaped siliqua (pp. 31, 32). When the fruits are ripe (and they begin ripening from the bottom of the raceme upwards, for it is the bottom flower-buds which open first), both the internodes of the floral axis of the inflorescence and each separate fruit-stalk lengthen so that the fruits are separated from each other.

The common name of the shepherd's purse is derived from the fact that the fruit are shaped like the purses that peasants used to wear around their waists. The botanical name, too, has a similar significance, *Capsella* being derived from *capsula*, Latin for little box, and *bursa-pastoris* coming from the Latin *bursa*, a purse, and *pastor*, a shepherd. But this plant is also known in some localities as pickpocket.

And why? this shepherd's purse that grows
In this strange spot, in days gone bye
Grew in the little garden rows
Of my old home now left: and I
Feel what I never felt before,
This weed an ancient neighbour here,
And though I own the spot no more
In every trifle makes it dear.

The Flitting: J. CLARE



GROUNDSEL

Top right, flower-head; bottom right, single flower

Like most members of the family, shepherd's purse is edible, having a biting taste. But it is not used as food in Britain today, though at one time it was listed as a pot-herb. In the Far East people still eat it.

Groundsel (*Senecio vulgaris*) is another ephemeral weed which seems to bloom the whole year round — at any rate, from February to December. Like the shepherd's purse, it favours bare soil and therefore flourishes on all sorts of cultivated soil and waste ground not covered with grass. In fact, one might almost say that this is not a wild plant at all, for it is seldom found anywhere but on cultivated ground. Again like the shepherd's purse, although it does not reproduce itself vegetatively, it can produce an enormous number of seeds each year, and in this respect is the complete nuisance. It is a very dull plant altogether.

Groundsel is a member of the largest of all flowering plants, COMPOSITAE, Dicot. The family is so named because there are many flowers together, that is, they are all crowded together in a flower-head called a capitulum (see p. 131). So the flower-head of groundsel, small though it is, is really a large collection of even smaller flowers.

The plant grows anything from three to twelve inches high. The leaves are deeply segmented, and each segment is toothed.

All the flowers in the capitulum are tubular; in other words there are no ray or ligulate flowers at all (*cf.* the daisy, p. 132). Each small flower is composed of five yellow petals united to form a tube having five teeth on its rim. Inside this corolla are five stamens and at the centre a single, one-chambered ovary with a long style, cleft into two curved branches at the tip. The sepals are modified into a pappus of white hairs. After fertilisation the fruit is formed and then these hairs lengthen and act as a parachute for the dissemination of the fruit. So the whole flower-head or capitulum is a bundle of white fluff when the fruits are ripe.



The bundle is kept together by an involucre of green bracts which surrounds the capitulum. This pappus of hairs is the reason for the generic name of the plant. *Senecio* is from the Latin *senex*, old — this referring to the hoary pappus: the specific name *vulgaris* is, of course, Latin for common, and an appropriate name it is in this case, for though botanists are too fond of saying a certain plant is common when to most people it is not, one cannot quarrel with them over the common occurrence of groundsel.

Groundsel is practically valueless, though it is frequently fed to caged birds, especially canaries. In former days it was used for making medicinal poultices.



Ernest G. Neal

SMALL CHICKWEED

The third weed which pesters the gardener during February is the small chickweed, and like its annoying companions it stays with us for a long time, for its flowering season lasts until October. But this plant is very ubiquitous and therefore grows in many places apart from cultivated ground, though it prefers damp situations. Like the shepherd's purse, it is said that this weed has followed the Briton wherever he has gone throughout the world — another of the multifarious ills for which the British will no doubt be to blame.

The small chickweed belongs to the pink or carnation family (CARYOPHYLLACEAE, Dicot.) — a family of very graceful herbs, many of which are wild (campions, pinks, corn cockle, stitchworts). Some chickweeds (there are several of them, p. 173) belong to the genus *Stellaria*, to which also the lovely stitchworts (p. 157) belong. The small chickweed is *Stellaria media*, the generic name embracing the Latin *stella*, a star, referring to the star-like appearance of many flowers of this genus (Plate 1).

Though the plant is a pest, it is not an unbecoming one. It sends out numerous delicate branches, many lying procumbent on the soil, but

THE FLORAL YEAR

covered with bright-green, succulent oval leaves arranged on the stem in pairs. The lower leaves are stalked; the upper ones are sessile. Down each internode is a single line of small white hairs, and the lines of two consecutive nodes alternate; this is the most diagnostic feature of the small chickweed. The entire plant forms a large, bright-green clump.

The flowers are borne on thin graceful stalks which emerge from the axils of those leaves near the tips of the straggling branches. Each flower is small, and most of its parts are in fives or multiples of five. There are five very small green sepals, five white petals, each of which is deeply cloven giving the star-like effect, five or ten, or sometimes only three stamens (for in many respects this is a very variable plant). The one-chambered ovary bears five or three styles. The fruit is a short capsule which, when ripe and ready to release its seeds, splits into as many valves as there are styles.

The best way to eradicate this weed is the same as for most weeds — pull it up and destroy it before it has had time to set seed, or even before it blooms, if possible. If, however, it has been allowed to become dominant and has spread over a large area, spraying with iron sulphate solution will prove effective. If growing where it can do no harm there is no reason why it should not be allowed to remain, for its bright-green colour, its small, perky, white flowers, present a cheerful appearance — not at all like the depressing groundsel.

The small chickweed is much relished by birds — hence the common name. But it is also a good pot-herb, though it is seldom used as such today except in certain parts of continental Europe. It has been recommended as a table vegetable too.

We have now come to the end of the list of wild plants which one is practically certain of finding in bloom during February.

The only tree which commences to bloom in open spaces and on parklands during February is the wych elm. This has already been discussed on p. 92.

Altogether February does not offer a glut of botanical material for those who are looking for flowers only. But there is enough, especially for the non-botanist who is starting his study of plant-life at the beginning of the year. If, however, he does not confine himself to flowers (which, here, for want of space, we must do) he will find much else of interest, for Nature has now well emerged from her season of lethargy and is stirring herself. Preparations for future activity are well in hand.

The hazel hath put forth his tassels ruffed;
The willow's flossy tuft
Hath slipped him free:
The rose amid her ransacked orange hips
Braggeth the tender tips
Of bowers to be.

Last Week of February, 1890: R. BRIDGES

FEBRUARY

OTHER FLOWERS WHICH MAY APPEAR IN OPEN SPACES DURING FEBRUARY

(The number following each flower is the page on which it is mentioned or described)

Butterbur, 139
Celandine, Lesser, 154
Colt's foot, 126
Daisy, 126

Dandelion, 126
Deadnettle, Red, 179
Deadnettle, White, 222
Snowdrop, 83

PART IV

MARCH

Slayer of the winter, art thou here again?
O welcome, thou that bring'st the summer nigh!
The bitter wind makes not thy victory vain,
Nor will we mock thee for thy faint blue sky.
Welcome, O March! whose kindly days are dry
Make April ready for the throstle's song,
Thou first redresser of the winter's wrong!

The Earthly Paradise: WILLIAM MORRIS

MARCH is a dangerous month, for the weather can never be trusted. The old West Country adage says:

March winds and April showers
Bring forth May flowers.

It might be all right if it were always like this; but then it frequently is not. Neither does March always come in like a lion and go out like a lamb.

One might ask: Does it really matter? After all, the weather of these islands is so uncertain anyway. But in the month of March, of all months, it does matter; any gardener, fruit-grower and farmer will admit this, just as they would admit that they need fine weather to dry the hay in June. For the sake of the crops we always hope that the weather during March will be 'seasonable'. Wordsworth, Bacon, Morris, and a host of other men of letters have described March weather as we would have it:

Like an army defeated
The snow hath retreated, . . .
The Ploughboy is whooping — anon — anon:
There's joy in the mountains;
There's life in the fountains; . . .
The rain is over and gone!

Written in March: WORDSWORTH

A dry March and a dry May portend a wholesome summer, if there be a showering April between.—*Sylva Sylvarum*: BACON

Yes. March should be dry and neither too warm nor too cold. But we cannot depend on this, and it is a matter of grave concern, because the plants are beginning to stir themselves, the buds on the trees are

MARCH

bursting, and so all the tender tissues are exposed, and these are very sensitive to temperature. I have seen dry, cool Marches, followed by showery Aprils and warm Mays. Then bumper crops have followed: the apples have weighed down the boughs of the trees and the plum branches have had to be propped up. But I have also experienced brilliant 'summer' weather in March. It was like this in the West of England during 1945. All the fruit trees were brought forward out of their season. Then, alas, along came three consecutive hard frosty nights in May and all the baby plum fruit and the apple blossom were ruined. There was no fruit at all that year. And all this because the weather was 'unseasonable': summer in March and winter in May.

Raymond Bush has shown that, owing mainly to frost damage (or otherwise), the fruit yield in England and Wales varies from the average by nearly 300 per cent, as against 30 per cent in the United States, 37.5 per cent in Canada and 17 per cent in Australia.

Wild flowers, too, are affected at this time of the year and we might discover April and May flowers blooming in March, or, on the other hand, everything might be backward.

Throughout history, however, March has been accepted as a month of high winds and rough but dry weather. The name is derived from the Latin *Martius*, after Mars the god of war. The Anglo-Saxons named the month *hlyd-monat*, meaning loud and strong, and sometimes they called it *lencten-monat* or lengthening month, for the days are perceptibly getting longer now.

There is much to occupy students of the British flora at this time of the year, but it is clear that so far as making discoveries are concerned this must be regarded as possibly a month of bitter disappointments or one of pleasant surprises.

10

WOODS AND COPSES

At the gates of the forest, the surprised man of the world is forced to leave his city estimates of great and small, wise and foolish. The knapsack of custom falls off his back.

Essays, Second Series: Nature: EMERSON

NATURE is now beginning to dress herself and in no place with more luxury than in a wood. Of course, much depends on what kind of a wood it is. If it is a beech wood, there is still nothing much new, for



WOOD ANEMONE

the trees themselves are not yet in leaf, and it is useless expecting much undergrowth, for there never is much in a beech wood (p. 45). On the other hand, if it is a dry oak wood, this is the time to look round the undergrowth though the oaks themselves will still be bare. If the wood is situated at high altitudes then we may not see much more than the brown remains of last year's bracken interspersed with the new year's fronds just beginning to uncurl. If the oak wood is on the lower slopes of the hills, on the plains or in the valleys, then we may expect to find many herbaceous plants in their season — in March, wood anemones, maybe daffodils, and sooner or later, primroses. A similar undergrowth can be expected in birch woods and certainly in hazel and alder copses.

HERBS

One of the earliest of woodland flowers is the graceful wood anemone or windflower. It is indeed one of the loveliest of all British early spring flowers (*Plate 2*).

Teach me the secret of thy loveliness,
That, being made wise, I may aspire to be
As beautiful in thought, and so express
Immortal truths to earth's mortality.

To a Wind-Flower: MADISON CAWEIN

Towards the end of March, certainly in April, damp woodlands and copses may be carpeted by this beautiful plant — a green mass of leaves and foliar bracts forming a background to the timid, drooping flowers. The plant blooms from early March until May. It forms an expansive carpet because it spreads vegetatively by

means of underground stems.

The wood anemone is another member of the buttercup family (RANUNCULACEAE, Dicot., p. 229). It belongs to the genus *Anemone*, which is a large one comprising well over a hundred species, though only about four are to be found growing wild in Britain. The wood anemone is *A. nemorosa*, the generic name being derived from the Greek *anemos*, wind, and *mone*, habitat, because the plant seems to revel in windy situations (though it has been suggested that the name was given because the flowers turn their backs to the wind). The specific name comes from the Latin *nemorosus*, meaning wooded. This plant is a perennial since it can perennate by means of its underground stems.



Harold Bastin

WOOD ANEMONES

Like its popular, multi-coloured garden relatives, the wood anemone produces two types of leaves. There are those large foliage leaves which grow from ground-level, and those which are borne in whorls of three on the flower-stalk itself. The latter are really foliar bracts, though they are very similar in form to the foliage leaves. Each foliage leaf and bract is compound, being composed of three large, deeply toothed leaflets. Furthermore, unlike those of the winter aconite (p. 86), the foliar bracts are borne well down the flower-stalk away from the flower-head, at any rate once the latter is open, for the flower-bud is carried away from them by the further growth of that part of the flower-stalk above the bracts. This is not always the case with the garden species and varieties, however.

The drooping flowers are usually purplish on the outside but white on the inside. Sometimes they are bluish both on the inside and the outside. The colour is due to six large sepals, for there are no petals, the sepals having become petaloid. When these sepals open, the flower may be as much as an inch and a half across. There are numerous pale-yellow stamens and many carpels. The flower frequently pollinates itself, though sometimes it is cross-pollinated by insects. Eventually the flower-head forms a collection of separate fruits, each of which is a dry achene.

THE FLORAL YEAR

And in my wake
Frail wind-flowers quake
And the catkins promise fruit.

The Months: A Pageant (March): CHRISTINA ROSSETTI

Perhaps the most popular of all wild flowers which appear during March is the primrose. But one will have to look diligently during the first weeks of the month, for there will be only a few blooms about. If the weather is warm, there will be more primroses towards the end of the month; but April is the month when the primroses are blooming in abundance. An inclusive season for this plant would be January to May, though the January and February flowers are the exception, never the rule, being confined to sheltered and secluded spots in the south and south-west of England (*Plate 2*).

In this low vale, the promise of the year,
Serene, thou openest to the nipping gale,
Unnoticed and alone, thy tender elegance.

To an Early Primrose: H. K. WHITE

The finest specimens of primroses are those which grow in damp woods and thickets where they are shaded and protected by the trees and bushes above them. But equally fine specimens grow in hedgerows



PRIMROSES

Anne Jackson

MARCH

provided the plants are well back beneath the hedge proper, thus ensuring for themselves the shade and protection equal to that offered by a wood.

In the fragrant hedges' hollow brambled gloom
Pure primroses paling into perfect bloom ;

An April Day : LAURENCE RINYON

Very often primroses leave their sheltered groves and invade more open hedgebanks, railway embankments, and so forth. Here they lack not only shade above but also a plentiful supply of water which is so desirable beneath. As a result they are much smaller, but like so many living things which have to strive against adverse conditions, they appear vegetatively more robust. The leaves are smaller though tougher and the flowers are sometimes even puny, borne on very short, comparatively thick stalks.

The primrose is a member of the family PRIMULACEAE, Dicot. — a family which thrives only in the north temperate areas of the world. The primrose itself belongs to the genus *Primula* to which the cowslip and many garden favourites belong. The botanical name for the primrose, *Primula vulgaris*, is an apt one, for the generic name is from the Latin *primus*, indicating early flowering, and *vulgaris*, of course, is Latin, meaning common.

Though it blooms once a year, the primrose is a perennial for it has stout root-stocks by means of which it can hibernate and later produce new plants which eventually form quite large clumps. All the leaves grow from the ground-level and are very characteristic in shape. In fact, they are diagnostic of most members of the genus, both wild and cultivated. They are long and egg-shaped, the base narrowing down, though along the whole of its length there is at least some leaf-blade, that is, the leaf cannot be said to be stalked. The veins are very pronounced and the whole surface of the leaf is wrinkled.

Beautiful Primroses,
With outspread heart that needs the rough leaves' care.

Wild Flowers : GEORGE MACDONALD

In many species of *Primula* the flowers are borne in a head called an umbel ; that is, each flower is borne on a stalk, but the flower-stalks of several flowers are together inserted at the tip of a common stalk. This is so even with the common primrose, though each flower seems separately borne on a long, thin, hairy pale-green or reddish stalk. Actually several flowers are joined to a common stalk which in this case is extremely short and lies hidden in the heart of the plant. Occasionally one comes across a case where this common stalk has become lengthened.

Like most other species of *Primula*, the primrose is subject to variation, especially in the colour of the flowers. Though there are many different cultivated primroses, such as blue primroses, white primroses and the

THE FLORAL YEAR

purple 'Wandas', there are also slight variations in the wild form. The most common wild primrose is the pale yellow, and though I have never seen growing wild what poets sometimes refer to as 'golden' primroses, I have found them almost white, and sometimes even with a greenish tinge. This probably does not explain Spenser's reference, in his *Shepherd's Calendar*, to "primrose Greene" however, for apparently at that time really pale-green forms did exist. But Herrick well describes it:

Ask me why this flower doth show
So yellow-green and sickly too?
Ask me why the stalk is weak
And bending (yet it doth not break)?
I will answer: These discover
What fainting hopes are in a lover.

Hesperides: HERRICK

Johns, in his *Flowers of the Field*, describes the colour thus:

The colour of the flower is so peculiar as to have a name of its own; artists maintain that primrose-colour is a delicate green: white, purple, and lilac varieties are not uncommon.

In "white, purple, and lilac varieties", Johns was probably thinking of the cultivated varieties, for wild examples are certainly not common, though they do occur.

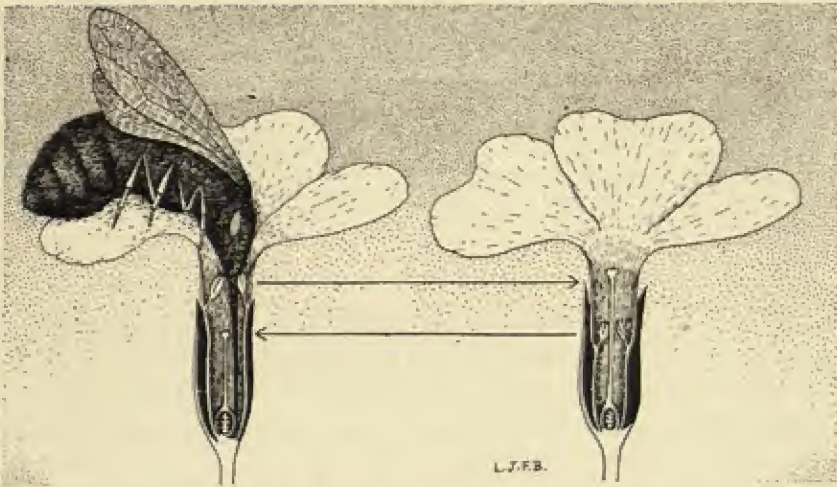
Nearly all *Primula* flowers are built up on a similar plan. There are five hairy, pale-green sepals united to form a tube having five pronounced teeth at the rim. The five pale-yellow petals are united at their bases and form a long, narrow tube which grows up within the calyx tube. Nectar is secreted in abundance at the base of the corolla tube. The five petals themselves are heart-shaped and spread out to form the very lovely floral disk. Inserted at a common level on the inside of the corolla tube are five stamens, and at the base of the tube, that is at the top of the floral receptacle, is the ovary formed by one carpel with a long style at the tip of which is a flattened circular stigma.

The primrose is pollinated by insects, but, like so many other early spring flowers, it frequently misses pollination and consequent fertilisation because the long-tongued insects are not busy yet. This fact is so beautifully described by Shakespeare, that, in spite of the fact that he has been quoted time and again, attention must once more be directed to him:

pale primroses,
That die unmarried, ere they can behold
Bright Phoebus in his strength, a malady
Most incident to maids.

The Winter's Tale, Act IV, Sc. 4: SHAKESPEARE

Yet in spite of all this the primrose has an elaborate mechanism for ensuring cross-pollination, for there are two kinds of primrose flower



POLLINATION OF THE PRIMROSE

Left, thrum-eyed ; right, pin-eyed

(and this applies to all species of *Primula*) — the 'pin-eyed' form, and the 'thrum-eyed' form (p. 25). Each differs from the other in two respects, namely length of style and level of insertion of the stamens on the corolla tube. In the pin-eyed form the style reaches to the top of the corolla tube, and the stamens are inserted a little more than half-way down. In the thrum-eyed form, the style does not reach the top of the corolla tube, but the stamens are inserted very near the top. So looking into the centre of a pin-eyed flower one sees what appears to be a 'pin' in the 'eye' of the flower: looking into the centre of the thrum-eyed flower one sees a 'thrum' or bundle of stamens in the 'eye'. How this dual morphology of primrose flowers effects cross-pollination can be seen in the diagram at top of this page. The fruit which results from fertilisation is a spherical capsule which splits at the top to release the ripe seeds.

It has been claimed that



Dr. D. Lewis

PRIMROSE FLOWERS

Left, pin-eyed ; right, thrum-eyed

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primrose plants make good salads. In the Middle Ages the flower was used for making love potions — stupid treatment for such a lovely flower.

And now we come to the rarer herbs which grace the undergrowth of woods and thickets in March. The first of them is the daffodil — certainly not an unfamiliar plant, for its many garden varieties are known to everyone of us (*Plate 2*).

Now the full-throated daffodils
Our trumpeters in gold,
Call resurrection from the ground
And bid the year be bold,

From Feathers to Iron: C. DAY LEWIS

But the wild daffodil is not now so common except in certain areas. This is owing to much vandalism in the past, for though the wild daffodil is not so resplendent as its many garden varieties, it is nevertheless a beautiful plant; so the wild daffodil which appears in those woods and thickets where it does grow during March and April, is the goal for children and gypsies who gather them for sale to the less-fortunate townsfolk.

The boys are up the woods with day,
To fetch the daffodils away,
And home at noon from the hills
They bring no dearth of daffodils.

The Shropshire Lad: A. E. HOUSMAN

How much, we wonder, has man changed the flora, even the wild flora, of this country. Primroses once grew on Primrose Hill (then just outside London), and we read in the *History of Rarer Plants*, published in 1601 by the Belgian, Charles de l'Écluse, that the daffodil

grows in much profusion in the meadows close to London that in that crowded quarter commonly called *Ceapside* in March the country women offer the blossoms in great abundance for sale, and all the taverns may be decked out with this flower.

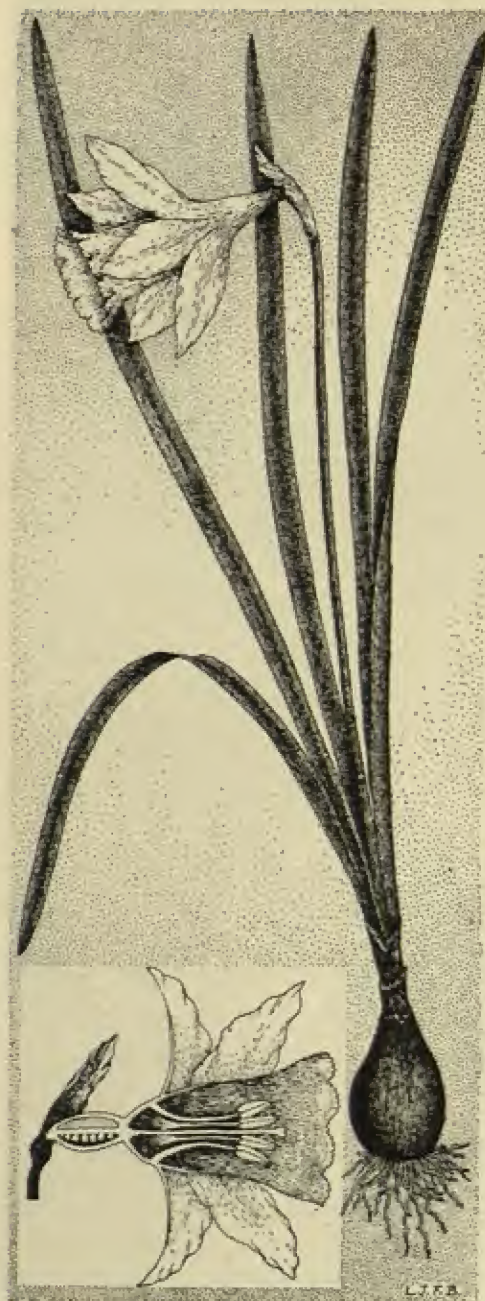
Both William and Dorothy Wordsworth immortalised the daffodil growing wild in the Lake District, but it is not so plentiful there today.

The daffodil belongs to the family AMARYLLIDACEAE, Monocot., named after Amaryllis, the shepherdess referred to in Theocritus and in Vergil. It is included in the genus *Narcissus* to which also belong the lovely pheasant's eye and the jonquil. The daffodil is *Narcissus pseudo-narcissus*. The common name daffodil is a corruption of the French *asphodel*, and the generic name is from the Greek *narkissos*, that which stupefies (for the daffodil is poisonous). The specific name indicates that it probably had no connexion with Narcissus, the figure in Greek mythology who was so beautiful that he fell in love with his reflection, though it has



"The Times"

A DISPLAY OF DAFFODILS AT DOROTHY'S FIELD, RYDAL
Rich with the memories of Wordsworth. The field is named after the poet's sister



DAFFODIL

Bottom left, flower in section

been claimed by some that daffodils sprang up where Narcissus pined away and died.

The daffodil is sometimes also known as Lent lily, for obvious reasons, and the name daffodil itself has had several corruptions in the past, frequently recorded in prose and poetry, such as affodil, daffadilly, daffadown-dilly, daffy-down-dilly (the last two appearing in Spenser's *Shepherd's Calendar*).

Growing in the vale
By the uplands hilly,
Growing straight and frail,
Lady Daffadowndilly.

In a golden crown,
And a scent green grown
While the spring blows chilly,
Lady Daffadown,
Sweet Daffadowndilly.

CHRISTINA ROSSETTI

The snowdrop (p. 83) also belongs to the family AMARYLLIDACEAE, Monocot., and botanically there is a close resemblance between the two plants. Though the wild daffodil is small compared with its domestic counterparts (it grows six to twelve inches high), it is much larger than the snowdrop. But in many respects both plants are alike with the exception of size, proportion of parts, colour and texture of flower. Both have a bulb (so the daffodil also is perennial), both have blade-like leaves, the flowers are very alike, each subtended by a bract or sheath at the tip of the stalk. But there is one fundamental difference: the daffodil has a

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corona or trumpet, but the snowdrop has not.

This fringed corona and the six tissue-like perianth segments of the daffodil are the outstanding characteristics of a floral genus which has no counterpart.

There can be no doubt that when the wild daffodils appear waving their golden heads in the breeze, then spring is at hand.

Those daffodils that from the mould
Drawing a sweet breath soon shall flower,
With a year's labour get their gold
To spend it on a sunny hour.

They from earth's centre take their time
And from the sun what love they need :
The proud flower burns away its prime,
Eternity lies in the seed.

The Magnetic Mountain: C. DAY LEWIS

Of the spurges, the wood spurge is the earliest to bloom. It frequents woods, copses and other shady places. It is a perennial herb (having a woody root-stock), growing anything from six to thirty inches high according to its immediate surroundings.

The spurges belong to a very useful family of plants, namely, EUPHORBIACEAE, Dicot. Most of the members of this family contain a juice or latex which in some cases produces a valuable commodity, for example, the rubber plant (*Hevea brasiliensis*). The castor-oil plant (*Ricinus communis*) also belongs to the same family; but the product which it yields is a fat.

Those plants of the family which are indigenous to Britain are not of economic importance except — some of them — as weeds. There are two common British genera, namely, *Euphorbia*, to which the spurges belong, and *Mercurialis* which is represented by dog's mercury (p. 124).

The latex of the spurges is poisonous, though in the past spurges have been used for medicinal purposes: in fact, the common name has been taken



Ernest G. Neal

WOOD SPURGE

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from the Latin *expurgare*, to purge. The generic name has been derived from Euphorbus, the physician who used spurges as medicines for King Juba of Mauritania, a former kingdom in north-west Africa. In later years the latex of spurge was used externally for the treatment of warts. The specific name of the wood spurge (*E. amygdaloides*) reflects bitterness, from the Greek *amygdale*, almond.

The wood spurge is an attractive plant despite its very curious flowers. The plant is robust, in fact, almost shrubby; though not so robust as the shorter sun spurge which blooms much later (p. 367). The leaves are arranged alternately on the stems. They are lance-shaped though expanding towards their distal ends, and they have smooth margins and hairy under-surfaces. During March the foliage is golden green, but in October it, and the stems, become crimson or even bright red. The flowers appear during March to May.

The inflorescence of all species of *Euphorbia* is extraordinary. It takes the form of a greenish-yellow, bell-shaped involucre of four or five teeth between each consecutive two of which is a large, crescent-shaped gland. Inside the involucre is one separate female flower surrounded by a dozen or more sterile or male flowers. So the plant is really unisexual. The female flower is composed of a single, three-lobed ovary having three styles, each of which is cleft into two branches at its tip. Each male flower comprises one stamen only. So this extraordinary inflorescence is really a single female flower, surrounded by male flowers all enclosed in an involucre bearing crescent-shaped glands. The entire ensemble looks like a single, strange flower, greenish-yellow in colour.

My eyes, wide open, had the run
Of some ten weeds to fix upon;
Among those few, out of the sun,
The woodspurge flowered, three cups in one.

The Woodspurge: D. G. ROSSETTI

The hellebores are now blooming in those few woods and copses where they might be found (mainly in the chalky districts of south-east England), for both are uncommon plants. There are two wild hellebores in Britain though neither is native to this country. They are the green hellebore or bear's foot which might begin flowering even in January but is at its best in March and sometimes continues until June, and the stinking or foetid hellebore or setterwort which also sometimes blooms so early as in January but is seldom found in flower after April.

The hellebores are further examples of the buttercup family (RANUNCULACEAE, Dicot.). They belong to the genus *Helleborus*, to which the familiar Christmas rose or black hellebore also belongs. The generic name indicates that the plants are poisonous, the term being derived from the Greek, *helleboros*, probably from *helein*, to kill, and *bora*, food. The adjectival name of the green hellebore (*H. viridis*) and the black

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hellebore or Christmas rose (*H. nigra*) are reflected in their specific names, but the Christmas rose is certainly not black: it is white, though the flowers turn green after fertilisation (p. 604). The flower of the green hellebore is green, as is also that of the stinking hellebore (*H. foetidus*), though the petals of the latter are tipped with purple. The disagreeable smell of the stinking hellebore is indicated in its common and specific names.

Three hundred years ago the stinking hellebore or setterwort was used for treating cattle of the pestilence and murrain. Some of the root was inserted beneath the loose skin of the throat of the animal — a process known as setting. Hellebores have also been used for the treatment of human ailments such as melancholia, epilepsy, paralysis and so forth. The Christmas rose (black hellebore) was also supposed to be a cure for madness.

In general appearance, both wild hellebores resemble each other, being perennial herbs growing about two feet high, though the green hellebore seldom exceeds eighteen inches. But there are sufficient detailed differences to render it very easy to distinguish between the two. The



Ernest G. Neal

GREEN HELLEBORE

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leaves are very like those of the Christmas rose, that is compound with all the lance-shaped leaflets emerging from one point at the top of the stalk. But the green hellebore is deciduous, whereas the stinking hellebore is evergreen.

The green hellebore bears only a few flowers on each stem, whereas the stinking hellebore bears large numbers. As in many other examples of the buttercup family, the petals themselves are very minute, though there are eight to ten of them. They have become modified into small tubular nectaries. There are five very conspicuous sepals which spread in campanulate (or salver-like) fashion in the green, but are erect or converging in the stinking hellebore. These sepals in both forms are yellowish-green, but those of the stinking hellebore are tipped with purple. There are many stamens and many carpels. The fruit is a collection of follicles.

So altogether, both these plants are typical of the buttercup family in basic organisation. They are closely related to the winter aconite (p. 86).

There is another herbaceous plant which blooms during March, and if seen at all it will be in woods or copses; but it is a very rare plant. This is the yellow star of Bethlehem. Although it, like the also rare white star of Bethlehem (p. 167), is a member of the family LILIACEAE, Monocot., the two plants should not be confused, for they are members of different genera — the white to the genus *Ornithogalum*, the yellow to the genus *Gagea*. The yellow star of Bethlehem (*G. lutea*) belongs to a genus (named after Sir T. Gage, the British botanist, 1781–1820) which comprises about thirty species — all confined to the temperate regions of the Old World. The specific name of the flower under consideration indicates its colour (Latin, *luteus*, yellow).

The yellow star of Bethlehem is bulbous (and therefore perennial). It is not a very large plant, growing anything from four to ten inches high. The leaves are long and narrow. The flowers are borne in umbels of four to eight at the top of long stalks. Each umbel is subtended by one or two large foliar bracts. The yellow flowers close during the afternoon. They often continue in bloom through March and April.

The structure of the flower is typical of a monocotyledonous family, so all parts are in threes or groups of three. There are six elliptical, yellow perianth segments and six stamens.

A curious feature of this plant is that it has another means of vegetative reproduction apart from the bulb beneath the surface of the soil. Some of the buds in the axils of the leaves form other small bulbs, or what are called bulbils. If the flowers remain unfertilised then these bulbils eventually drop off, and, after a period of rest, develop into new plants.

A MARCH TREE

The time is now approaching when our attention will be drawn back to the trees, for some of them are beginning to burst into flower and some will soon begin to display the new season's leaves.

The 'Lady of the Woods' — silver birch (*Betula alba*) is now beginning to do both. The birch belongs to the family BETULACEAE, Dicot., to which the alder also belongs. The common name of this graceful plant is derived from the Anglo-Saxon *birce*; the generic name is Latin for birch, and *alba*, of course, means white. The winter habit of birch is described on p. 76.

Beautiful delicate birch leaves are at present bursting from their winter buds, but they will not achieve full maturity until April. In general, they are heart-shaped, but the apex is sharply pointed, and the margins are unevenly serrated. Their long stalks are flattened in a vertical plane and that is why the leaf-blades flutter in the breeze.

Rippling through thy branches goes the sunshine,
Among thy leaves that palpitae for ever;
Ovid in thee a pining Nymph had prisoned,
The soul once of some tremulous inland river,
Quivering to tell her woe, but, ah! dumb, dumb, forever!

The Birch-Tree: j. R. LOWELL

The catkins of the birch are now mature, though they were formed as early as last autumn. The male catkins are dark red and pendulous. Each is composed of a large number of bracts and each bract subtends three male flowers. A single flower is simple, being made up of one sepal and two deeply cleft stamens. The female catkins are more or less erect — never pendulous. There are many bracts in a catkin. A single bract subtends two or three flowers, each of which comprises a single ovary bearing two long styles. The female catkins grow longer after



BIRCH

Top left, male catkins; bottom right, spray of foliage; top right, female catkin, winged fruit, scale-bearing female flowers, scale-bearing male flowers

fertilisation. The fruit is winged and it is therefore easily disseminated through the air; but this does not usually occur before September.

Birch twigs at one time were bunched together to form an effective instrument for inflicting corporal punishment on badly behaved boys. But for many years now the 'birch' has had only a symbolical significance.

Now, as fond fathers
Having bound up the threatening twigs of birch,
Only to stick it in their children's sight
For terror, not to use, in time the rod
Becomes more mock'd than fear'd.

Measure for Measure, Act I, Sc. 3 : SHAKESPEARE

SHRUBS

The two shrubs which bloom during March are both of unusual habit. They are butcher's broom and mistletoe. Neither is very common.

The butcher's broom (*Ruscus aculeatus*), sometimes known locally as knee holly, box holly, Jew's myrtle or shepherd's myrtle, is more familiar than its rare occurrence in the wild state would suggest. The same can be said of the mistletoe, because both are evergreens and both are used for home decoration during the winter months, though butcher's broom has no traditional significance as the mistletoe has (p. 597).

Butcher's broom is a shrub which grows three to four feet high. Though it is by no means common in the wild state, it does sometimes appear in copses, mainly in the south of England. It is another member of the lily family (LILIACEAE, Monocot.), though not a typical one. It spreads by means of a stout root-stock. The true leaves are insignificant scales borne on the green, strongly ridged stems. In the axils of these leaves are the conspicuous, flattened oval organs known as phyllodes, each with a sharp spine at its tip (p. 16). Unlike the true leaves these phyllodes orientate themselves in a vertical plane.

Unlike most foliage leaves but like many stems, these phyllodes bear flowers. The flowers may be out in February; they certainly are in March, and frequently continue to appear in April. About midway between the base and the tip of the phyllode there is an insignificant



BUTCHER'S BROOM
BEARING BERRIES

Bottom left, female flower; bottom
right, male flower

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scale-leaf in the axil of which a flower is borne. This flower, small though it is, is typically liliaceous, though unisexual. Usually male and female flowers are borne on different plants, though occasionally both sexes of flowers are borne on different branches of the same plant. The male flowers are usually borne on narrower phyllodes. The female flower has six dirty-white perianth segments and a three-chambered ovary. The male flower may have three or six stamens but no perianth segments. The fruit is a large, bright-red berry, conspicuous against the background of the dark-green phyllode. In some cases the berry is yellow, but this is rare.

The botanical name for butcher's broom is picturesque, for at one time butchers made besoms from its branches for cleaning their blocks. *Ruscus* reflects this: *rus*, being Latin for country, the rest of the word being derived from *scopa*, meaning besom. Some authorities derive the name from the Celtic *brus*, box, and *kelen*, holly, hence one of the alternative common names. The generic name *aculeatus* is from the Latin *aculeus*, a prickle.

The other shrub which is in flower during March is the mistletoe — a plant familiar to millions of people who have probably never seen it growing, for it shares pride of place with the holly (p. 596) as a Christmas decoration. Consideration of the part played by mistletoe in folk-lore and especially in the Yuletide tradition will be deferred until the month in which the festival occurs (p. 597). At this stage, since the plant is in bloom, its botanical characters and significance will be dealt with.

Mistletoe belongs to an exceptionally interesting family, namely, LORANTHACEAE, Dicot. — interesting because nearly all members of the family (of which there are more than five hundred species) are parasites, or rather semi-parasites, on other living plants. It is perhaps not quite fair to accuse these plants (as most authors do) of being of parasitic habit, for a real parasite is one which derives all its nutrition from another living host plant (or even animal). This parasitic habit develops throughout evolution until such plants become degenerate (as their animal and human analogues invariably do). Therefore, in the case of a truly parasitic plant, the green leaves, which are the normal plant's food factory, are no longer required as such, so they either disappear or are reduced to insignificant colourless scales. The broomrape (p. 258) is an example of this. Now members of the family LORANTHACEAE are not like this; they bear green leaves (in most cases all the year round) and therefore manufacture their own food. Yet they live partly on other plants, tapping their hosts for water and dissolved mineral salts. So it is better to call such plants semi-parasites.

Although this large family of semi-parasites is widely spread throughout tropical and temperate countries, there is only one British example, and that is the mistletoe. It belongs to the genus *Viscum* which comprises

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about a score of species, though the mistletoe (*V. album*) is the only British member. The common name of this exceptional plant is derived from the Anglo-Saxon *mistel-ta*, which is a compound of *mist*, the German for droppings of a bird, and *tan* (Old Norse, *toin*), which means plant or shoot. The name originated from a misconception that the plant actually sprang from the droppings of a bird. Though this, of course, is not so, it is true that the plant is distributed by birds. The birds (especially the missel thrush) relish its white fruit, but they soon find that the glutinous material inside the fruit is too much for them, and, in rubbing their beaks on the trees in an attempt to rid themselves of the troublesome stuff, they sow the seed contained within the fruit. The generic name, *Viscum*, is Latin not only for mistletoe but also for bird-lime, which is, of course, sticky.

Apart from the fact that this plant is a semi-parasite (and therefore partially degenerate), it has other even more morbid associations, for it was a branch of mistletoe that killed Balder the Beautiful (p. 599).

A barren detested vale, you see it is ;
The trees, though summer, yet forlorn and lean,
O'ercome with moss and baleful mistletoe.

Titus Andronicus, Act II, Sc. 3 : SHAKESPEARE

Although one can visualise mistletoe being sown on the branches of all sorts of trees by indiscriminating birds, not all such seeds are successful in germinating to form new plants, for not all trees are suitable. The most favoured host trees are apple and poplar, though sometimes other trees such as oak and hawthorn are discovered bearing mistletoe shrubs in the forks of their branches.

Once the seed germinates it sends out a sucker which penetrates the bark and other tissues of the branch, eventually striking the tree's sap-wood up which is rising the water containing dissolved mineral nutrients.

As the plant grows year after year it forks in a regular dichotomous fashion ; that is, each growing point branches into two, producing a Y-shaped fork. Each such fork represents "one year's growth. The next year the branches of the fork similarly branch again. So the general habit of a mistletoe



Robert M. Adam

MISTLETOE FLOWERS

MARCH

shoot is flat. Near the tip of each branch is a pair of leathery, elliptical leaves, yellowish-green in colour.

The flowers are unisexual and are usually borne on different plants, though occasionally both male and female flowers will be found on the same plant. This explains why some mistletoe plants never bear the familiar white 'berries', for they are wholly male. The leaves of male plants are usually broader than those of the female. The flowers are borne in axillary clusters. The male has four, six or eight insignificant, greenish sepals and a corresponding number of stamens, but there are no petals. The female flower has four very small petals, but the calyx is reduced to a mere disk. There is a simple ovary with a single style. The fruit is not really a berry though it looks very like one. The white sticky mass which surrounds the single seed is not derived from the carpellary wall (as in a true berry), but is really the receptacle of the flower which, after fertilisation, has swollen and enveloped the seed.

OTHER FLOWERS WHICH MAY APPEAR IN WOODS AND COPSES DURING MARCH

(The number following each flower is the page on which it is mentioned or described)

Aconite, Winter, 86

Cinquefoil, Strawberry-leaved, 124

Elm, Common, 92

Elm, English, 92

Hazel, 87

Mezereon, 85

Primrose, 106

Snowdrop, 83

Spurge laurel, 85

Strawberry, Barren, 123

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HEDGES AND BANKS

THE undergrowth of hedges does not offer much that is new during March unless the weather has been especially mild and the season consequently very forward; then April flowers might be already making their début. Yet the barren strawberry, or strawberry-leaved cinquefoil, and dog's mercury can be expected to be in bloom no matter what the weather is like. Neither at this season of the year can we expect much activity in the hedge proper, for most of the shrubs, bushes and coppiced trees which make up the typical British hedge have still to emerge from their winter sleep, though towards the end of the month the hedges in warm and sheltered spots might be showing signs of bursting into leaf. The winter buds ought certainly to be swelling in preparation for this

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initial period of activity. But so far as general dormancy is concerned there is one exception, for the blackthorn or sloe, in spite of the fact that its black twigs are still quite leafless, is now becoming a mass of white bloom which stands out in keen contrast to the winter nakedness of the other shrubs and trees around.

TREES AND SHRUBS

The blackthorn or sloe (*Prunus spinosa*), though sometimes appearing as a small tree, more often grows in hedges as a sturdy bush having no pronounced trunk. It belongs to the rosefamily (ROSACEAE, Dicot., p. 302). The generic name indicates its relation to the plum, and the specific name is a reminder of its thorny nature.

As can well be imagined, such a familiar and conspicuous plant has numerous local common names, among which the most picturesque are hedge speaks, quick, winter picks and snag bush.

Like the garden plum, which is derived from the wild plum (*P. domestica*), the blackthorn blooms before the leaves appear. The small white flowers envelop the whole plant in a veritable white cloud during March and April.

Now blooms the lily by the bank,
The primrose down the brae;
The hawthorn's budding in the glen,
And milk-white is the slae;
The meanest hind in fair Scotland
May rove their sweets amang;
But I, the Queen of a' Scotland,
Maun lie in prison strang!

*A Lament of Mary Queen of Scots, on the
Approach of Spring: BURNS*

The blackthorn flower is in general similar to most other rosaceous flowers. There are five green, boat-shaped sepals, five larger white petals, between fifteen and twenty stamens and one carpel only — this inserted at the bottom of a sunken receptacle. Thus the flower is a smaller version of the plum flower, though the latter usually has more stamens.¹ The fruit is a comparatively large drupe — fleshy and black, often covered with a bloom like the fruit of a black grape; but this does not ripen before September. This plant pays dearly for blooming so early in the year, for though it is usually covered with bloom it never bears the corresponding number of fruits. This is mainly because, in spite of effective fertilisation, the very young fruits beginning to form so early in the year are unable to withstand the frosts which usually occur during that time.

The small, simple elliptical leaves of the blackthorn begin to unfold

¹ *Trees in Britain*, by L. J. F. Brimble. See illustration on p. 160.



T. Edmondson

BLACKTHORN BLOSSOMING

from their buds after the flowers have withered away — that is, towards the end of April.

The elm tree of the hedges is now even redder with its masses of small flowers on the naked twigs than it was during February when the first flowers began to emerge (p. 92).

HERBS

On the hedgebanks, occasionally even well back into the undergrowth of the hedge (sometimes even in woods and copses), another member of the rose family (ROSACEAE, Dicot., p. 302), namely the barren strawberry, should now be displaying its flowers. In fact, this herb is one of the earliest of British flowering plants, frequently blooming in January and so on until May; but it is usually at its best during March.

The barren strawberry (*Potentilla fragariastrum* or *sterilis*) must not be confused with the wild strawberry (*Fragaria vesca*) (p. 227), the forerunner of the garden strawberry. The two belong to different genera, though these genera are closely related to each other within the same family. The barren strawberry, however, more closely resembles the silverweed (p. 343), cinquefoil (p. 344) and tormentil (p. 374) — all members of the same genus. The generic name *Potentilla* is the Latin derivative of *potens*, signifying active medicinal properties, though the barren strawberry does not appear to have any of importance.

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The barren strawberry differs vegetatively from the wild strawberry in that it produces no runners. All the same it is a perennial, for it has a strong root-stock. These two strawberries also differ conspicuously in their fruit.

The entire barren strawberry plant is procumbent and the stems are very hairy. The leaves are compound, each being composed of three sharply toothed leaflets borne at the end of a long leaf-stalk. The leaf-blades are covered with fine silky hairs on both upper and lower surfaces.

The flowers are white and comparatively large. There is a calyx of five green, boat-shaped sepals, and alternating with these are five smaller segments collectively known as the epicalyx. The five large, white, heart-shaped petals, indented at their tips, are borne in a single whorl inside the calyx. Within the whorl of petals are many yellow stamens and at the very centre of the flower a large number of free carpels which, after fertilisation, produce a corresponding number of fruits in the form of dry, non-splitting achenes. So the barren strawberry is far from being sterile, though it does not produce a fleshy structure like the wild strawberry does (p. 227). This explains the common name and also the alternative specific name, *sterilis*. Nevertheless such nomenclature is unfortunate, and the specific name *fragariastrum* is therefore to be preferred, as also is the alternative common name, strawberry-leaved cinquefoil, for this reflects its relationship with the cinquefoils and also eliminates the misleading term 'barren' (Plate 2).

Dog's mercury (sometimes called herb mercury) is a very common plant, frequently growing in masses along tall hedgerows and often carpeting woods and copses — for it is a shade-loving plant. It bears its insignificant flowers during March to May.

Where mid the dark dog-mercury that abounds

Round each moss stump, the woodlark hides her nest.

Morning Pleasures: J. CLARE

Dog's mercury belongs to the family EUPHORBACEAE, Dicot., to which the wood spurge (p. 113) and other spurges belong. But though the spurges are included in the genus *Euphorbia*, dog's mercury is the main British representative of the genus *Mercurialis* — a small genus distributed chiefly in Mediterranean regions. The only two British species are *M. perennis* (dog's mercury) which, as its name implies, is perennial for it has a creeping rhizome, and *M. annua* (annual mercury), a less common weed which blooms during July to November (p. 468). The generic name is after the god Mercury who, according to legend, discovered the medicinal virtues of these herbs. But though even John Gerard, the sixteenth-century herbalist, regarded dog's mercury as having medicinal virtues, the legend must only apply to the annual mercury, for dog's mercury is very poisonous. It is interesting to read the opinion of Sir John Hill, the eighteenth-century botanist, in this connexion:

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There is not a more fatal plant [dog's mercury], native of our country than this ; many have been known to die eating it boiled with their food ; and probably many also whom we have not heard of ; yet the writers of English herbals say nothing of this. Gerard, an honest and plain writer, but ignorant as dirt, says it is thought they agree with the other mercuries in nature.

Like all members of the family EUPHORBIACEAE, the flowers are unisexual, but unlike most other members, in dog's mercury the sexes are borne on different plants. Both male and female plants grow anything from six to twenty inches high. The herbaceous stems bear the leaves in opposite pairs, one pair being in a plane at right angles to the next pair. Each leaf is oval with serrated margins and a pointed, though not very sharp, apex (*Plate 2*).

The small male flowers are borne in long-stalked inflorescences which shoot out from the axils of the uppermost leaves. Each flower has three greenish sepals, no petals and eight to twenty stamens. The female flowers are not so conspicuous for they are clustered together in sessile inflorescences. To each female flower there are two insignificant sepals and a two-chambered ovary, formed by the fusion of two carpels, and having a pair of styles. The fruit is a capsule.

OTHER FLOWERS WHICH MAY APPEAR IN HEDGES AND BANKS DURING MARCH

(The number following each flower is the page on which it is mentioned or described)

Celandine, Lesser, 154

Deadnettle, Purple, 179

Deadnettle, Red, 179

Deadnettle, White, 222

Elm, Common, 92

Hazel, 87

Primrose, 106

Violet, Sweet, 89

12

OPEN SPACES

With rushing winds and gloomy skies,
The dark and stubborn Winter dies ;
Far off, unseen, Spring faintly cries,
Bidding her earliest child arise :
March !

March : BAYARD TAYLOR

IN open spaces some of our more familiar flowers are now presenting themselves, and not least among them is the common daisy. But then this hardy favourite is with us most of the year round — certainly from March to October, and occasionally during the other months too. Neither

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is March the month when it is most prolific with its blooms, as anyone who tries to keep his lawn clean, tidy and exclusive will agree. This happy little plant is most luxuriant during May, June and July. Then there are masses of flowers to be seen in all sorts of open spaces — frequently where they are not wanted, as weeds.

COMPARISONS AND CONTRASTS WITHIN A FAMILY

March has been chosen as the month for directing attention to the daisy for several reasons. Although daisies sometimes appear in flower even in January, it is not until March that one is fairly certain of finding specimens. So now is the time to examine them, because dandelion and colt's foot are also announcing themselves at this time, and it will be particularly useful to study all three flowers together for they have so much in common. They all grow in open spaces, they are all beautiful weeds that frequently also grow where they do no harm, they closely resemble each other in fundamental structure, and therefore, as might be surmised, they are all members of the same family — the largest family of all, COMPOSITAE, Dicot (p. 98).

In spite of the fact that the daisy may be a most irritating pest, it is a very popular member of the British flora; for centuries, hundreds of poets, both major and minor, have been telling us this (it was the "poet's darling" according to Wordsworth), and we cannot help but agree.

Now have I thereto this condicioun
That, of alle the flowers in the mede,
Than love I most these flowers whyte and red,
Swiche as men callen daysies in our toun.

The Legend of Good Women: CHAUCER

And what is the favourite flower? Beyond all question the daisy. Without it Chaucer would hardly think of "the merry month of May". It was to him, in days when words were fresher, the "eye of the day" indeed.—*Flowers of Speech* in *The Squirrel's Granary*: SIR WILLIAM BEACH THOMAS

Daisies, those pearl'd Arcturi of the Earth,
The constellated flower that never sets.

The Question: SHELLEY

And the brightest thing we knew,
In a land of gaudy flowers,
Was a daisy tipped with dew,
English! Ours?

Palestine: FRANK KENDON

For centuries the daisy has also figured in herbals as a cure for many ailments and wounds.

The daisy's name is derived from the Anglo-Saxon, *daeges eage*,

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meaning day's eye, for the flower-head closes at night (and during inclement weather also) and opens again during bright daylight. This lovely yet perky plant has found favour in other countries, too, judging by its name. In French, for example, it is the *marguerite*, meaning pearl; in German it is *Masslieb*, meaning love measures (this is one of the many plants used by lovers to decide whether 'she loves me' or 'she loves me not'): also in German it is *Tausendschönchen*, a thousand beauties, or *Gänseblume*, a goose-flower.

Yet, like Kendar, we tend to look upon the daisy as being particularly British. In those bygone times when we celebrated Empire Day (on May 24), this flower was used for the emblem of the day. On that day children used to wear it in their button-holes. It is definitely a children's flower, although, alas, even those days when children delighted in making daisy chains are fast dying out. We wonder too how many people in the north of England still call the daisy a bairnwort (children's flower); no doubt more people north of the Border do so, though there they also call it gowan. Among the many more restricted local common names are mother of thousands, silver penny, hens and chickens, batchelor's buttons and maudlinwort.

The botanical name for the daisy is *Bellis perennis*, the generic name deriving from the Latin *bellus*, pretty, and the specific name indicating its perennial habit, for it pops up every year, perennating by means of its short, thick, underground stems. The genus *Bellis* is a small one indigenous to Europe, especially in the Mediterranean regions: the only representative of the genus in Britain is the daisy.

The vegetative structure of the daisy is well known. Its general build is the very reason why it is such a pernicious weed on lawns. There is no main stem. Arising from the underground stem, at ground-level, the oval leaves form a rosette pressed closely to the surface of the ground. This foliar rosette chokes out any grass which might attempt to grow within its ambit. Furthermore, such a rosette, being so very flat, can withstand considerable pressure from above.

Trampled under foot,
The daisy lives and strikes its root
Into the lap of time; centuries may come
And pass away into the silent tomb,
And still the child, hid in the womb of time,
Shall smile and pluck them, when this simple rhyme
Shall be forgotten, like a churchyard stone,
Or lingering lie, unnoticed and alone.

The Eternity of Nature: J. CLARE

A beautiful poem, but we wonder what the owner of a lawn thinks of it. He might curse the daisies for being eternal, for, though there are certain expedencies which help to keep them down, more often there is nothing for it but to bend one's back and root them out one by one. None of the

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underground stems must be left, else they will almost certainly grow again.

The leaves of daisies growing in fields, especially where the grass is long, are not arranged in such close rosettes but grow up obliquely. Furthermore the green or pinkish flower-stalks vary in habit; those on open lawns are short and thick; those in fields are long and slender.

In many respects the dandelion closely resembles the daisy.

Simple and fresh and fair from winter's close emerging,

As if no artifice of fashion, business, politics had ever been,

Forth from the sunny nook of its shelter'd grass — innocent, golden,
calm as the down,

The spring's first dandelion shows its trustful face.

Sands at Seventy: WHITMAN

The dandelion also grows in different types of open spaces and so varies in habit according to immediate habitat. When growing in fields or hedgerows, its leaves do not form rosettes but grow upright or obliquely, and they are large; but when growing as a weed in the garden, or worse still on the lawn, then the smaller leaves form a tight rosette. To make matters worse, as the thick tap-root gets older it contracts and so pulls the entire shoot down into closer contact with the surface of the soil.



DANDELION

Ernest G. Neal

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Also like the daisy the dandelion has a long flowering season, mainly March to September, but sometimes throughout the whole year. March is not the most prolific month for flowers, but there are plenty of dandelions about now. May and June, however, are the months when they bloom in abundance, often bringing splashes of colour to the green meadows, and, alas, buttoning the lawns with golden stars (*Plate 3*).

How like a prodigal doth nature seem
When thou, for all thy gold, so common art !

To the Dandelion : J. R. LOWELL

The dandelion is very persistent. If it is growing where it is not wanted then it must be completely eradicated, for if the smallest bit of root be left in the soil, adventitious buds will shoot out from the callus which forms across the wound, and then more dandelions will appear. There is nothing for it but to dig up the whole plant if possible. If, owing to the close proximity of other plants, this is not practicable, then the shoot should be torn off, and the exposed surface of the root left in the soil treated with dry salt or sulphuric acid. This should kill off what remains.

But in spite of its unpopularity, the dandelion is a beautiful plant.

Star-disked dandelions, just as we see them lying in the grass, like sparks that have leaped from kindling suns of fire.

The Professor at the Breakfast Table : O. WENDELL HOLMES

The name is derived from the French *dent-de-lion*, lion's tooth, not due, as is sometimes said, to the tooth-like appearance of the flower-head, but to the backwardly pointing sharp lobes of the leaf. The French name is in turn derived from the Latin *dens* and *leo*, referring to the dentate leaves. The alternative French common name, *pissenlit*, corresponds to a vulgar nickname which in some localities in Britain is applied to this plant.

The dandelion belongs to the genus *Taraxacum* — a genus sparsely represented in Britain though comprising altogether about twenty-five species confined to temperate regions. The dandelion itself is *T. officinale* or *vulgare*. The generic name is derived from the Greek *taraxis* or *tarasso*, to stir up, since the plant was at one time used as a diuretic. The specific name *officinale* is used frequently in botanical nomenclature and is from the Latin *officinos*, an apothecary's shop ; so any plant to which this name is applied specifically is, or was, used in medicine : the alternative specific name *vulgare* means common.

The plant is perennial because buds are formed in the leaf-axils, and these develop into new plants in the following year. Unlike the daisy, the whole dandelion plant contains a juice or latex very like many members of the EUPHORBACEAE (p. 113). In fact, certain species of dandelion yield a latex like *Hevea* does (p. 113), and from it rubber is produced. But so far such species have not been cultivated successfully in Britain,

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though it is stated that certain species of *Taraxacum* which yield a high percentage of rubber are being grown in the U.S.S.R.

The leaves of the dandelion widen from the base upwards, ending in a broad apex. The margins are very deeply though irregularly toothed, and the teeth point backwards. The flower-heads are borne on smooth, hollow, latex-containing stalks. The latter are pale-green or pinkish, long when the plant is growing in a sheltered position, short and stout when growing on lawns.

Much use has been made of this plant in the past, though the British species is not considered of much economic importance today. The leaves are popular among some people for use in green salads; and indeed they are to be recommended, though only young leaves should be used, for the older ones are tough and very bitter. Thus eaten, the leaves are supposed to be a cure for liver and kidney disorders. In the United States, some people boil the leaves and serve with vinegar and butter. The flower-heads were once used for making dandelion wine. The latex is sometimes applied to warts; in due course the warts turn black and eventually disappear. Dried dandelion roots are occasionally used as a substitute for coffee.

There was one came to the door sellin' skewers a year' two ago; and she told his wife to take dandelion tea; and that took the slug off her liver as quick as quick.—*Idlehurst*: JOHN HALSHAM

The third member of the COMPOSITAE found blooming during March is colt's foot. It grows in many open habitats, though it favours cultivated ground, especially in moist clayey or chalky areas. Its flowering season is not so extended as those of its relatives, the daisy and the dandelion, though it frequently appears even in February. In March, however, it is sure to be found in flower, and from then onwards until the end of May.

Colt's foot belongs to the genus *Tussilago* — in fact, it (*T. farfara*) is the only species of importance. The generic name is derived from the Greek, *tussis*, a cough, since the plant is considered to be a cure for this ailment. It is still used in herbal tobacco. The origin of the specific name is obscure. Some believe it comes from the Latin *far*, meal, and *fero*, to bear, referring to the mealy appearance of the lower surface of the leaves: others derive the word from *Farfarus*, the Italian river. The common name refers to the shape of the leaf.

Colt's foot is an unusual composite in that the flowers appear before the leaves. It is a perennial, having thick underground stems. The leaves do not appear until the flowers have withered away, that is, well into April, and sometimes not until May. They are of unusual shape, that is, like a shield, or somewhat resembling the imprint of a colt's foot. They are often as much as ten inches across. Like those of the daisy and the dandelion, they are all radical. When very young the complete leaf



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appears mealy because it is covered on both sides with a thick white down of hairs. As it matures, the down on the upper surface disappears, but that on the lower surface remains. Once upon a time, this down was collected and used as tinder.

The flower-heads are held aloft on stout, erect stalks which bear pronounced bracts: when in bud, the flower-head does not drop as so many botany books state, though the fruiting head does.

Now having considered the vegetative structure of the daisy, dandelion and colt's foot, let us compare and contrast their floral structure, for by studying the flowers of these three plants a good idea of the whole family COMPOSITAE is obtained.

The COMPOSITAE are almost unique in the structure and arrangement of their flowers. So far, when mentioning the floral organs, the term 'flower-head' has been used (for that is what it is). What superficially appears to be a single flower is really a head of many flowers. It is called a capitulum. Each capitulum is surrounded by a collection of bracts called an involucre. The daisy, for example, has a yellow disk composed of many small flowers, and a surrounding ray made up of white flowers. The entire collection is supported by an involucre of green bracts.

Each separate flower of the COMPOSITAE is in general composed of various whorls of organs in fives (apart from the carpels). But all are modified or unusual. The sepals may be reduced to scarcely anything but a toothed rim or they may be modified into a collection of hairs, called a pappus, or into a number of bristles. The five petals may be united along their entire length giving a hollow tube (toothed at the rim). This corolla tube will surround a similar tube made up of five stamens which in turn surrounds the ovary. Such a flower is said to be tubular, and a typical example is one of the yellow disk flowers of the daisy. In other cases the five petals are not united to form a tube but are joined along their entire length to form a strap which may or may not be toothed at the tip. Such a flower is said



Ernest G. Neal

COLT'S FOOT



FLORAL STRUCTURE OF DAISY, DANDELION AND COLT'S FOOT

Left, daisy capitulum and tubular and ligulate flowers enlarged; *middle*, dandelion capitulum and ligulate flower and fruit enlarged; *right*, colt's foot capitulum and tubular and ligulate flowers enlarged.

to be ligulate, and a typical example is the white ray flower of the daisy.

Apart from certain modifications or reductions peculiar to each species, all flowers of this family are constructed according to either the tubular or the ligulate design. Then with regard to the arrangement of such flowers within the capitulum there are three possibilities: (1) all tubular flowers, (2) all ligulate flowers, (3) a mixture of both. Those species which contain at least some tubular flowers, that is, groups 1 and 3, are placed together into a sub-family known as the TUBULIFERAE: those which contain nothing but ligulate flowers, that is, group 2, form the sub-family LIGULIFLORAE.

The daisy obviously belongs to group 3, and therefore is a member of the TUBULIFERAE. Close examination of the colt's foot will reveal that it also belongs to the same sub-family. On the other hand, all the flowers of the dandelion capitulum are ligulate, so that flower belongs to the LIGULIFLORAE. The groundsel (p. 98) has nothing but tubular flowers.

The yellow disk of the daisy is made up of many tubular flowers, and the ray is composed of larger white ligulate flowers tipped with pink. The tubular disk flowers are hermaphrodite, having both stamens and carpels. There are four or five (usually the latter) yellow petals. Though in many composite flowers the calyx is modified to form a hairy pappus

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or a group of bristles, there is no calyx at all in the daisy. The corolla tube surrounds five united stamens which extend above the rim of the corolla tube; the stamen tube surrounds an ovary having a long style cleft at the tip. The ray, ligulate flowers of the daisy are female only, so they have no stamens; neither is there a pappus. The five white petals are united along their entire length, not to form a tube, but a strap.

Daisy flowers are cross-pollinated — a process aided by the rhythmic opening and closing of the capitulum. To prevent self-pollination, the pollen from the stamens of the tubular flowers is shed before their own styles are ripe. The pollen falls inside the stamen tube, and then the unripe style grows in length and thus pushes the pollen over the top of the stamen tube on to the surface of the yellow disk. Insects which crawl over the disk thus transfer the pollen on to the styles of other flowers which may be ripe. When the flower-head closes, the stigmas of the ray florets are brought into contact with any loose pollen which may be present on the surface of the disk and thus they too are cross-pollinated. The resulting fruit is a dry achene with no pappus.

The capitulum of the dandelion is the familiar conspicuous, large bright golden head.

Shock-headed Dandelion
That drank the fire of the sun.

The Idle Flowers : R. BRIDGES

The involucre of bracts is very evident, the inside larger ones overlapping each other, and the smaller outer ones curving backwards. All the single yellow flowers of the capitulum are ligulate and all possess both stamens and ovary. The hairy pappus (a modification of the sepals) is very pronounced, and after fertilisation this pappus is pushed up on a long stalk so that the ripe fruit is at the bottom of a very effective parachute. When all the fruit of a capitulum are ripe, the whole becomes a large spherical body with the tops of the parachutes outermost — giving the well-known 'clock'. By means of their parachutes the fruits are dispersed far and wide through the air.

The Dandelion, cheerful children's clock
Making a joke of minutes and of hours,
Ironical to us who wryly watch.

The Garden : V. SACKVILLE-WEST

In the colt's foot, though there are tubular disk flowers and ligulate ray flowers, they are not so easily distinguished as those of the daisy, for they are all yellow. Both types of flower have a hairy pappus which collectively give the whole capitulum the appearance of a ball of fluff when the fruits are ripe. The colt's foot has another means of preventing self-pollination. Although styles are present in the tubular flowers, the ovaries are sterile. On the other hand the ray flowers have no stamens. So tubular flowers are male only, and ligulate flowers are female only.

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The sterile style of the tubular flower shoots up after the pollen is shed just as in the case of the daisy. Then the pollen is brought into contact with the fertile styles of the ligulate flowers (*Plate 3*).

These lions, each by a daisy queen,
With yellow manes, and golden mien,
Keep so still for wind to start
They stare, like eyes that have no smart.
But, once they hear that shepherd pipe,
Down meadows and through orchards ripe,
They dance together, lion and daisy,
Through long midday, slow and lazy;
Each dandelion in his fierce lust
Forgets the sunset's red-dy rust;
Now by night winds roughly kissed
His mane becomes a clock of mist
Which mortal breath next morn will blow,
While his white virgins bloom below.

Dandelion: SACHEVERELL SITWELL

The cultivated crocus (*Crocus vernus*, *C. versicolor* and *C. aureus*), one of our most popular harbingers of spring, is a member of the iris family (IRIDACEAE, Monocot., p. 391), and must not be confused with the autumn crocus or meadow saffron (*Colchicum autumnale*) which is a member of the lily family (LILIACEAE, Monocot., p. 205).

Look where the ranks of crocuses,
Their rebel colours will display
Coming with quick fire to redress
The balance of a wintry day.

The Magnetic Mountain: C. DAY LEWIS

It is certain that Day Lewis is referring here to those crocuses whose gay colours in the garden come as such a relief when for months there has been little else except perhaps snowdrops, violets and Christmas roses. Crocuses are considered fairly fully in *Flowers in Britain* (p. 345), so little time will be allocated to them here, especially as our main concern is with wild flowers.

Yet the golden *Crocus vernus* does grow wild, though very rarely, in Britain. The entire genus is an Old World one, and it contains about sixty species. The golden crocus may be found in a few meadows in eastern England (mainly Suffolk). Also in the same area the very rare *C. biflorus*, a species having mauve flowers with streaks of purple and yellow, may sometimes be found. The white *Crocus albiflorus*, too, grows wild in a few localities. All these crocuses are in flower during March and April. The saffron crocus (*C. sativus*) and the naked-flower crocus (*C. nudiflorus*) bloom in the autumn (p. 555).

The generic term *Crocus* is derived from the Greek, *krokos*, meaning saffron, which in turn is derived from *kroke*, a thread, referring to the thread-like styles (of *C. sativus*) from which saffron, the orange-yellow

dye and flavouring material, is made (p. 556).

Of special interest is the corm by means of which this plant hibernates and vegetatively reproduces itself (p. 16). In early spring (so far as some species are concerned) the terminal bud of the corm (or swollen stem) bursts forth and produces flowers and green foliage leaves. The latter get longer after the former have withered away. Meanwhile, the base of a small axillary bud (enclosed by a scale-leaf) begins to swell to produce a corm for the following year. During the spring, especially after the flowers have withered away, food manufactured by the green-foliage leaves is passed down to this developing young corm and there it is stored. Meanwhile the old corm is shrivelling up since its food store has been utilised during the growth of the present flowers and leaves. After the plant's activities have ceased and even its foliage leaves have died down, the new corm remains dormant in the soil until the following season. Frequently several new corms are formed like this on one corm, and thus the plant multiplies vegetatively. It can now be seen why the long leaves of the crocus should not be cut off after the flowers have died. They must be allowed to remain, otherwise no food will be available for the development of the new corms.

The tiny whitlow grass, which grows in all sorts of dry places, especially on very dry banks and even on walls, is now in bloom. It is a member of the wallflower family (CRUCIFERAE, Dicot., p. 95), and though a small plant, it conforms closely to the main characteristics of the family. It belongs to the genus *Draba*, which is rather a difficult one since there are many varieties which tend to breed true to themselves. There are, however, several distinct species. That now in flower, the common whitlow grass, is *D. verna* (though some Floras place this particular species in another genus — *Erophila*). It blooms from March until May. The other species present their flowers later in the year, though the very rare yellow whitlow grass (*D. aizoides*) is also now in flower; but this cannot be confused with the common whitlow grass because the latter's flowers are white. (The hoary whitlow grass, *D. incana*, and the rock whitlow grass, *D. rupestris*, are not in flower before June.)

The generic name *Draba* is from the



WHITLOW GRASS

Top left, flower; bottom right, fruit opening

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Greek, *drabe*, acrid ; in fact, so closely related are the whitlow grasses to the acrid cresses that some of the former are called cresses. The common name, whitlow grass, is supposed by some to be a corruption of the Middle English, *outlaw*. The specific name, *verna*, relates to spring (*Plate 3*).

All the leaves of the common whitlow grass are radical and thus form a rosette, though it is a fairly loose one. Each leaf is small, lance-shaped and hairy. The flowers are borne in loose racemes at the top of flower-stalks which vary from one to six inches in height. The tiny flower is typical of the family having four green sepals, four deeply notched white petals, four long stamens and two short ones, and an ovary composed of two fused carpels with a style cleft into two stigmas. The fruit is oval and slightly convex and has a central partition. It is therefore a siliqua.

OTHER FLOWERS WHICH MAY APPEAR IN OPEN SPACES DURING MARCH

(The number following each flower is the page on which it is mentioned or described)

Celandine, Lesser, 154	Gorse, 94
Chickweed, Small, 99	Groundsel, 98
Deadnettle, Red, 179	Shepherd's purse, 95
Deadnettle, White, 222	Snowdrop, 83
Elm, Wych, 92	Speedwell, Field, 180
Furze, 94	Wallflower, 182

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MARSHES AND RIVER BANKS

IT is now becoming noticeable that as the weather gets warmer, plants in more exposed situations are beginning to arouse from their winter sleep or new ones grow. Apart from the hardy shepherd's purse, groundsel and a few others, the February flowers are those of sheltered woodlands and hedgerows. In March, flowers begin to present themselves in more open spaces.

But there are other factors which influence growth and development apart from protection from, or exposure to, high or cold winds. So far as temperature is concerned, it must be borne in mind that to take into account the general atmosphere around us is not enough when considering plants. For these are static organisms, and temperature (and indeed humidity) just a few inches above the ground varies from that a few feet above. The variation may be only very slight, but it is sufficient to effect plant growth and development, and so such differences must be considered

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by the student of plant ecology. For example, it helps to explain why plants which grow in water-logged soil or near water are usually later in their floral development than others are. The result is that marshes and river banks are more prodigal with their floral adornment during June and July than they are during March; though even now some flowers are putting in an appearance for the first time. It will at any rate be possible to find two conspicuous flowers, namely, the marsh marigold and the butterbur.

HERBS

The marsh marigold is a great favourite with country-folk, which is not surprising, for it is indeed altogether a lovely plant — both in leaves and flowers. Being so popular, it is therefore no cause for wonder that it has a host of alternative common names, such as kingcup, golden cup, soldier's button, brave celandine, may-blob, mare-blob, horse-blob, Mary-bud, publicans and sinners, and, in Scotland, luckan gowan.

One a King,
General or Cham, Sultan or Emperor,
Strews twenty acres of good meadow-ground
With carcasses. . . .
Another sits i' th' sun, and by the hour
Floats kingcups in the brook — a Hero one
We call, and scorn the other as Time's spendthrift.

The Borderers : WORDSWORTH

Horse-blobs stain with gold the meadow drain.

Sonnet : J. CLARE

And winking Mary-buds begin
To ope their golden eyes :
With every thing that pretty is,
My lady sweet, arise.

Cymbeline, Act II, Sc. 3 : SHAKESPEARE

We'll pu' the daisies on the green,
The lucken gowans frae the bog.

The Young Laird and Edinburgh Katy : A. RAMSAY

As its name implies, the marsh marigold grows in marshy land. The golden flowers can be spotted from afar off, so large and strikingly coloured are they. Though they usually appear during March, it sometimes happens that the weather is too severe for them during this month, then one must wait until April for the real thrill of finding them. They enjoy a fairly long season, sometimes still appearing in June (*Plate 3*).

The marsh marigold belongs to the buttercup family (RANUNCULACEAE, Dicot., p. 229), but is sufficiently different from the true buttercups or

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crowfoots (*Ranunculus*) to warrant a separate genus (*Caltha*). Though a few minor species are recognised in Britain, the marsh marigold (*C. palustris*) is the only common representative in these islands of a genus which comprises about a score of species confined to temperate countries in both Old and New Worlds. The generic name is contracted from the Greek, *kalathos*, a cup, referring to the shape of these lovely floral chalices. The specific name, *palustris*, is from the Latin, *palus*, a swamp, and thus signifies the marshy habitat of the plant.

She shook her lap, and wide and bright
Great kingcups to that waste she threw
Where nothing lived, and nothing grew ;
Now, where poetry passed, there stays
The light of suns, the fire of days,
And these cups for kings to hold
Made summer with their wide-eyed gold.

Kingcups: SACHEVERELL SITWELL

The common name, marigold, refers to the superficial likeness to the real marigold of our gardens (*Calendula officinalis*), and it is derived from Mary's gold since the Blessed Virgin is supposed to have worn it. But the marsh marigold must not be confused with the marigolds of many poets (including Shakespeare), for the flowers of the former do not open and close with the sun. Even botanist authors have made this mistake.



Ernest G. Neal

MARSH MARIGOLD

It is interesting to note that the marsh marigold is sometimes also called cowslip in the United States.

The entire plant is large and handsome, very juicy in most of its parts as one would expect in view of its habitat. The stems, however, contain many minute air spaces. The leaves are large, heart-shaped and present very shiny surfaces. Neither on them nor on any other part of the plant are hairs to be seen. The yellow floral organs are not petals but sepals which have become petaloid. The real petals have disappeared during the course of evolution. There are many stamens and many free carpels which, after fertilisation, develop into a collection of follicles (as do those of many

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members of this family, p. 31), which split to release the ripe seeds.

Though the marsh marigold is not much recognised as of culinary value in Britain, in the New World it is. In many parts of America it is used either as a pot-herb, or the stems and leaves are boiled and served as a creamed, green vegetable. The flower-buds, too, are frequently pickled and used as substitutes for capers. The plant has, however, sometimes found favour even in Britain. In some herbals it is claimed as being good for the treatment of anaemia and epilepsy.

Fair is the marygold, for pottage meet.

The Shepherd's Week (Monday): JOHN GAY

The butterbur frequents marshy meadows (where they are shaded), but it is more frequently seen growing beside ponds and lakes and on shaded river banks. It is a member of the family COMPOSITAE, Dicot. (p. 126), and, though much larger, resembles the colt's foot in certain respects (p. 130). For example, the flowers which are now presenting themselves might appear even in January and continue until May; but the main thing is they appear before the leaves do. But once the leaves do present themselves there is no mistaking them, for when mature they are enormous, being anything from one to three feet across. They too resemble the leaves of the colt's foot except that they are much larger, more pointed at the apex, and more serrated at the margins. The under-surface is hairy. But one must wait until the summer months before the leaves are fully expanded. Then they form a thick canopy which, while acting as a covert for wild-fowl, are a real menace to any other near-by plants. In fact, Johns describes the butterbur as the "largest, and where it abounds, the most pernicious, of all weeds which this country possesses". One cannot help feeling that Johns was either too hard on this plant or his own fields or garden were special victims of the butterbur, for after all, a weed is a plant which grows where it is not wanted,



Ernest G. Neal

BUTTERBUR IN BLOOM

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and the butterbur usually grows in places where it can do little harm. Nevertheless, if it does happen to be near cultivated ground, it can prove to be a nuisance, for it is a perennial and spreads by means of thick, underground rhizomes (*Plate 3*).

The butterbur belongs to the genus *Petasites*, a genus of north temperate areas. The generic name is from the Greek, *petasos*, a broad-brimmed hat — referring to the enormous expansion of the leaves. The common wild species is *P. vulgaris* (in some Floras, *P. ovatus*). In shrubberies, etc., there may be seen also the two species *P. fragrans* (winter heliotrope, whose flowers emit a vanilla fragrance) and *P. albus*, both having cream or white flowers and later producing leaves as large as umbrellas.

The size of leaf of the butterbur is of distinct benefit to a plant which grows in shaded areas where plenty of water is available, for the large surface catches what sunlight there is for food manufacture and yet offers plenty of transpiration area for getting rid of the considerable excess water which such a plant is bound to contain.

The flowers of butterbur are pink. They are borne in dense spikes on a thick, fleshy stalk which, like that of the colt's foot, is covered with bracts; but, in the case of the butterbur, the bracts graduate from a simple, lance-shaped organ at the top of the stalk to an almost foliar organ at the bottom (*p. 139*).

All flowers are tubular, so butterbur belongs to the sub-family TUBULIFERAE (*p. 132*). All the flowers are unisexual, and usually the flowers of one complete plant are either all male or all female, though occasionally one comes across a plant which is composed of mainly one sex with a few of the opposite sex also. The male flowers produce a large amount of nectar. There is a pronounced pappus.

TREES

The catkins of the white poplar or abele (*Populus alba*), grey poplar (*P. canescens*) and the aspen or asp (*P. tremula*) are now mature, and pollination and consequent fertilisation will be taking place during March and April. All these trees will be found along river banks and also in hedgerows and occasionally woods (*p. 69*); the white poplar and the aspen are also frequently seen growing in parkland (see also black poplar, *p. 152*).

The catkins are usually mature before the leaves break bud, for the latter do not begin to emerge until April — sometimes even later. Both male and female catkins of poplar and aspen are pendulous. The sexes are borne on different trees. Each male flower has a rudimentary perianth and a large number of stamens. The female flower is very simple, being composed of a lance-shaped hairy bract subtending a stalked, flask-shaped carpel with the stigma cleft into sometimes as many as five segments.

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It is doubtful whether the white poplar is indigenous to Britain. Male trees are rare anywhere, and neither male nor female trees bloom north of the Border. The grey poplar is most probably indigenous to this country. It may be a hybrid between the white poplar and the aspen. Its stigmas are cleft into four. The aspen is very common. Its leaves might be already showing signs of emerging. When they finally do so the vertically flattened leaf-stalk should be noted, because it is by virtue of this peculiarity that the leaves tremble in the slightest breeze.

With every change his features play'd
As aspens show the light and shade.

Rokeby: SCOTT

The leaf-forms of poplars and other characters of these trees must be examined later on in the year; they are described in *Trees in Britain* (p. 222 ff.).

The purple osier or rose willow (*Salix purpurea*) is also now presenting its catkins in those damp places and osier grounds where the plant grows. The catkins continue into April.

PART V

APRIL

April the angel of the months, the young
Love of the year. Ancient and still so young,
Lovelier than the craven's paradox ;
Christ's Easter and the Syrian Adonis,
When all things turn into their contrary,
Death into life and silence into sound ;

The Garden : V. SACKVILLE-WEST

APRIL is a month of promise ; for spring is now in full swing — bushes and trees are preparing to burst into leaf, and many more flowers introduce themselves for the first time. The floral year now becomes well established and there is more than enough material to satisfy the demands of the keenest field botanist.

This is the second month of the Roman calendar, though the fourth of the modern one. The very name implies 'opening' for it is traditionally derived from the Latin *aperire*, an implication which is probably directed to the opening of leaves and flowers. Both French and German names have the same origin.

Typical April weather is the ideal for young growing plants and for trees stirring out of their winter slumber, for the temperature is usually fairly high and the periodic showers which we always associate with April give the necessary extra amount of water needed during active growth. Country folk say that given plenty of showers during April followed by warm sunshine in May then good crops are assured.

Carefully now Spring puts her stitches
Along the hedges and the ditches,
Deciding what shall first appear
On the dark fabric of the year ;
To mark the pattern, to define
With delicate, brief line,
Where soon her prodigality will shine
And all her riches.

Of white or gold or crimson red
Or emerald green, she takes a thread ;
With here a pearl and there a star
Where the wild plum and blackthorn are ;
With here a curl and there a stud,
This for the orchard, this the wood ;

APRIL

With here a spear and there a frond
To fill the garden, edge the pond ;
Tinsel for frog and willow ;
For celandine, chrome yellow ;
Red sprig for dark green laurel ;
Rose-bush, a crest of coral ;
White horse-shoe for the small wood-sorrel ;
The hazel stave ; many a crotchet ;
For Veronica, her watchet ;
The strawberry leaf, well notchèd ;
And amid the brown
Cross-hatching shown,
The honeysuckle's Attic crown.

Feather-stitch, petit-point and couch,
The season deepens touch by touch,
Till what was little becomes much ;
Last, the perfection of her art —
To give to every flower a jewelled heart.

The Embroideress : SYLVIA LYND

14

TREES AND SHRUBS

Again with pleasant green
Has Spring renewed the wood
And where the bare trunks stood
Are leafy arbours seen ;
And back on budding boughs
Come birds to court and pair,
Whose rival amorous vows
Amaze the scented air.

Invitation to the Country : R. BRIDGES

QUITE a number of our most important trees burst into bloom during April ; some of them begin to display their new foliage though not until towards the end of the month. For convenience, however, the foliage of these trees will be mentioned with their flowers.

All the oaks are in bloom in April. Their winter habit is described on p. 38. There are the two common oaks (*Quercus pedunculata* and *Q. sessiliflora* — the latter being sometimes called the durmast oak, found mainly in the west and north. Then there are the less common Turkey oak (*Q. cerris*), Lucombe oak (*Q. lucombeana*), holm, holly or

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evergreen oak (*Q. ilex*) and the cork oak (*Q. suber*). Other oaks, such as the American red oaks (*Q. rubra* and *Q. coccinea*), may be seen under cultivation.

The oaks belong to the family FAGACEAE, Dicot. — a family of trees of world-wide distribution (with the exception of Central and South Africa). The genus *Quercus* itself is widely distributed over the north temperate areas of the world and the mountainous regions of the tropics and sub-tropics. The origin of the generic name is doubtful, though it might be derived from the Celtic *quer*, beautiful, and *cuez*, tree.

The flowers of the oak are unisexual though male and female are borne on the same tree. They appear during April and frequently persist into May. The male flowers grow in loosely constructed, green catkins, two to three inches long. Each male flower is composed of five to seven sepals; but there are no petals. There are usually about the same number of stamens, though sometimes there may be so many as a dozen. The female flowers are very inconspicuous. They occur in groups



OAK LEAVES

Top left, American willow oak (*Q. phellos*); bottom left, common oak (*Q. pedunculata*); top middle, American red oak (*Q. coccinea*); bottom middle, holm oak (*Q. ilex*); top right, American red oak (*Q. rubra*); bottom right, Turkey oak (*Q. cerris*)

of two to five, and each flower consists of a three-chambered ovary enveloped in a cupule of bracts. There are three styles. The fruit is the familiar acorn described on p. 565.

The female flowers of the English oak (*Q. pedunculata*) are, as the specific name implies, stalked, so therefore are the acorns: those of the durmast oak (*Q. sessiliflora*), again as the specific name implies, are sessile, so the acorns are stalkless.

Oak leaves, at any rate those of the common oaks, are very familiar. In all species they are borne spirally. They are deeply lobed and each lobe is rounded at the tip. The leaves of the Turkey oak are more deeply cleft. The holm, holly or evergreen oak keeps each of its leaves for two years, so that it is evergreen. In this case, the leaf is dark green in colour, oval in shape and either smooth of margin or spiny.

Most of the oaks are to be found growing in woods, though often they occur singly in hedgerows.

The beech (*Fagus sylvatica*) is also a member of the family FAGACEAE, Dicot.; it too bears its flowers during April and May. The generic name is Latin for beech tree and the specific name is also Latin indicating inhabiting a wood. By virtue of its dark-green foliage the beech casts such a shade that scarcely anything but fungi and other non-green plants can exist beneath its canopy.

As the leaves open out they present a very pale shade of green, and the blade is edged with white down. Later the down is shed and the leaves become much darker. The leaf-blade is oval with wavy, serrated margins terminating in a sharp point. The leaves are arranged alternately, thus giving a flattened mosaic to the leafy twig.

Like the oak, the beech is unisexual, and both male and female flowers are borne on the same tree, though the beech does not necessarily bloom every year. The male flowers are borne in clusters at the ends of long, pendulous stalks. There are no petals, but four to six united purplish, hairy sepals and twice as many golden stamens. The female flowers are less conspicuous. They are borne in pairs or even in threes or fours. Each group of female flowers is enclosed in a cupule of overlapping scales. Each flower is composed of three joined carpels with three styles. The fruits are nuts enclosed in a bristly cupule (p. 567).



COMMON OAK

Top left, male catkin; middle left, male flowers; top right, female flowers; bottom right, acorn removed from its cupule (p. 565)



BEECH

Left, twig bearing foliage; top right, clusters of male flowers and two female flowers enclosed in a cupule; middle right, single male and female flowers; bottom right, ripe cupule closed and one opened exposing seeds (p. 567)

Though the ash (*Fraxinus excelsior*) also blooms during April and May it is a sluggard with its leaves, for these do not reach maturity until June.

Delaying as the tender ash delays
To clothe herself, when all the woods are green.

The Princess: TENNYSON

The generic name *Fraxinus* is derived from the Greek *phrasso*, a fence, for the wood of the ash is often used for fence-making; *excelsior* is Latin, indicating lofty. The plant is a member of the family OLEACEAE, Dicot. — a very widely distributed family containing also such garden favourites as lilac, jasmine and privet. The ash is sometimes called the 'Venus of the Forest'. It grows mainly in meadows and hedgerows where plenty of water is available. Its winter habit is described on p. 63.

Ash leaves (which, of course, will not yet be available) are compound, being made up of a long leaf-stalk bearing three to eight pairs of lateral leaflets and a terminal one. Each leaflet is lance-shaped with finely serrated margins.

The flowers are reddish, and they may be either unisexual or herm-



aphrodite. All three forms of flower may be borne on the same tree or there may be only one form on the tree. In any event the flowers are very inconspicuous, having neither sepals nor petals. The hermaphrodite flower is made up of two purple stamens and two reddish-purple carpels. The unisexual flowers have either two stamens (male) or two carpels (female). The fruit is a typical samara (p. 30).

Among the rosaceous trees (ROSACEAE, Dicot.) which bloom during April and May are the rather rare wild plum and the bullace (p. 70).

The bullace (*Prunus insititia*) is very like the blackthorn (p. 70) though of a robuster habit. It appears in hedges. The leaves are larger and broader and have hairy under-surfaces, and the floral petals are also larger. The bark is not so dark in colour as that of the blackthorn, neither has the bullace so many thorns. The cultivated form is the well-known damson; in fact, it is quite likely that most of the so-called wild bullaces are really garden escapes.

The wild plum (*P. domestica*), like the bullace, grows in hedges, but it is not at all common. It is entirely spineless and, like those of its cultivated varieties, the flowers open before the leaves. The fruits of both bullace and plum are drupes (p. 33).

The evergreen box blooms during April though its flowering season is more extended than those trees hitherto considered, for the flowers continue well into June, and if the weather is fairly good they open out before April. (I have seen box blooming even in January.) This tree is a native of the Mediterranean area and on through Iran to the western Himalayas. It is very common under cultivation in Britain though it has now spread into the wild state especially in the chalky and calcareous areas of the south. Rarely is it seen as a tree under cultivation, for it is the victim of much clipping to form hedges and to satisfy the absurd craze for topiary work. When growing wild, however, especially on Box-Hill in Surrey, it attains the



BOX FOLIAGE

Also male flower and a fruit

dimensions and habits of an attractive tree.

Box belongs to the small family BUXACEAE, Dicot. — a family which, small though it is, is scattered throughout most parts of the world. The plant in question is a member of the genus *Buxus* (from the Latin for a box tree, though it might also be connected with the Greek *puknos*, dense, referring to the hard grain of the wood), and it has been assigned the specific name of *sempervirens*, a word derived from the Latin meaning ever-green (*semper*, always, *virens*, green).

Buxus sempervirens as a tree bears long drooping branches which support small, oblong deep-green leaves arranged in pairs. These are somewhat aromatic.

And in the scent of box on genial day
When sun is warm as seldom in this isle,
Smell something of the South, as clippings pile
Beneath your tread, like aromatic spray
Strewn down the paving of the cathedral aisle.

The Garden : V. SACKVILLE-WEST

The unisexual flowers are borne in clusters in the axils of the leaves, each cluster being composed of one large female flower surrounded by several smaller male flowers. Each male flower has four whitish-green sepals, four stamens and a sterile ovary. The female flower has four or more sepals and a three-chambered ovary surmounted by three conspicuous styles. The fruits are evident by July. Each fruit takes the form of a large, green capsule having three rough horns near its distal end; these horns are the remains of the styles. Inside the capsule are three chambers each containing two black seeds.

Several members of the willow and the poplar tribes, both belonging to the family SALICACEAE, Dicot., begin blooming during April. SALICACEAE is a widely distributed family of trees and shrubs only; the family is not represented however in Australasia or Malaya and the surrounding archipelago.

The willows belong to the genus *Salix*. The origin of this generic name is not certain. It may be derived from the Latin *salio*, to spring out, for some of the willow species are very quick-growing trees. On the other hand, the name might originate from the Celtic *sal*, near, and *lis*, water, for most willows grow near water.

Though it is not difficult to recognise members of this genus, it is by no means easy to differentiate the many species; in fact, even botanists are not agreed as to how many species of *Salix* there are; there may be about a hundred and thirty species altogether. Then again botanists are not agreed as to how many of these are indigenous to Britain — some say as many as eighty, others claim no more than fifteen. It is certain, however, that quite a number of species now seen growing in Britain are really exotic.

APRIL

In mute desire she sways softly ;
Thrilling sap up-flows ;
She praises God in her beauty and grace,
Whispers delight. And there blows
A delicate wind from the Southern seas,
Kissing her leaves. She sighs
While the birds in her tresses make merry ;
Burns the Sun in the skies.

The Willow : WALTER DE LA MARE

In the Scriptures, the willow was mainly associated with sadness and woe, and so it has been ever since ; but the Psalmist's willows in " By the rivers of Babylon " were not willows at all (even Linnæus made this mistake) — they were a species of poplar (*Populus euphratica*). A willow garland was once worn as a sign that the wearer had been disappointed in love. Shakespeare referred to this several times, so did other poets.

Thou art to all lost love the best,
The only true plant found,
Wherewith young men and maids distrest,
And left of love, are crown'd.

To the Willow-Tree : HERRICK

The winter habits of the willows are described on p. 68.

The goat willow (*Salix caprea*) is very conspicuous when in flower, and since it blooms during April and May it must serve as our type specimen. The catkins of flowers appear before the leaves, for the latter do not burst forth until May. This is the case with most species of willow, though not all.

The goat willow is sometimes also called sallow, pussy willow and palm. The specific name, *caprea*, is Latin for she-goat, and this indicates, as does one of its common names, that the leaves are relished by goats. The leaves are oval (unusual in willows), and slightly serrated. Goat willow leaves are hairy on their under-surfaces.

The flowers are unisexual and are borne in erect catkins. As in all willows, the males and females are borne on different



Ernest G. Neal

MALE GOAT WILLOW BLOOMING

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GOAT WILLOW

Top left, male catkin; top right, female catkin; bottom left, male flower; bottom right, female flower

trees. They appear in April before the leaves have emerged, which thus renders the large, golden male catkins very conspicuous.

And through the leafless underwood rich stains
Of sunny gold show where the willows bloom.

The Willows: J. CLARE

Mid willow blossoms blond as curd.

The Anniversary: LAURENCE BINYON

Each ovoid male catkin is made up of several hundreds of male flowers and is born direct on to the woody twig, suspended by a few scales. Each flower is composed of a single, boat-shaped hairy bract which subtends two long, conspicuous golden stamens. The female catkin is also large but less conspicuous, since it is greenish. Each flower is simple, being made up of two carpels united to form a flask-shaped, stalked ovary surmounted by a cleft stigma, the whole subtended by a hairy bract.

Both male and female flowers secrete an exceptional amount of honey which attracts bees.

For some obscure reason, goat willow is associated with palm and is used for church decoration on Palm Sunday.¹

Though most species of willow found growing in the southern areas of Britain prefer damp situations, the goat willow may also be found in drier habitats such as hedges, parks, edges of woods, and even on slag heaps.

The white or Huntingdon willow (*S. alba*) is very common in Britain, frequenting river banks where it is often pollarded.

By burgeoning woods, across the hours, we strayed,
And where white willows swing
Above a quiet-watered meadowland
Colour-flooded with spring.

Wood with the Twisted Trees: DOROTHY M. PAULIN

The tree grows to a height of sixty to eighty feet if not pollarded. Its leaves are long and narrow, but its catkins (open in April and May, before the leaves) are less conspicuous than those of the goat willow. It owes its common name to the fact that the under-surfaces of the leaves are almost white with down.

¹ *Trees in Britain*, by L. J. F. Brimble, p. 215.

The cricket-bat willow is a hybrid of the white willow (*S. alba*) and the crack willow (*C. fragilis*); but it has now been raised to specific rank (*S. coerulea*). It grows very quickly, sometimes attaining its adult height of about one hundred feet within the first twenty years of its life. The cricket-bat willow is not common outside certain areas in the east of England, and everywhere there are many more females than males. The tree grows along river banks. Its leaves have grey under-surfaces.

The crack or Bedford willow (*S. fragilis*) is so named because its branches have a tendency to snap off at their bases. It is the most common willow in Britain, growing along river banks, and sometimes also on exposed hillsides. Its leaves sometimes attain a length of six inches: but their under-surfaces are not hairy.

The male flowers of the almond-leaved or French willow (*S. triandra*) each have three stamens, as the specific name indicates. This is a small species of willow tree seldom growing more than twenty feet in height. It also may be found growing in river-banks, and in damp woods and osier beds where it is cultivated for the sake of the long slender branches which emerge when the trunk is pollarded. The leaves are rather oblong, and their under-surfaces are covered with a pale-green bloom.

The round-eared or auricled willow (*S. aurita*) is a small bush sometimes found growing in damp copses and on damp heaths. It seldom grows more than four feet high. The leaves are oblong, small and wrinkled. The specific name is from the Latin meaning with ears, referring to the very large, ear-like leaf-stipules.

The grey willow (*S. cinerea*) is very common in woods. The margins of its leaves are partially furled. The specific name is from the Latin *cinis*, ashes, reflecting the ashen-grey colour of the under-surfaces of the leaves.

The common osier willow or withy (*S. viminalis*) is another of the many willows which bloom during April and May. It sometimes grows in damp woods, but is more frequently seen growing under cultivation in osier beds. Like those of the other willows so far mentioned, the leaves emerge after the flowers have opened. The former are lance-shaped with wavy but unserrated margins. The common osier is a tree attaining a height of thirty feet if not checked, but it is more often pollarded to order to obtain the long thin branches needed for wicker work. This is indicated in the specific name which is from the Latin *vimen* meaning pliant twig. *Viminalis Collis*, one of the seven hills of Rome, was so named from a willow copse which grew there. The closely related purple osier (*S. purpurea*) bloomed earlier (p. 141).

Among the dwarf willows there are two which bloom during April and May: they are the dark-leaved willow (*S. nigricans*) and the tea-leaved willow (*S. phylicifolia*). Both of these willows are confined to damp exposed places and osier beds in Scotland and the north of England. The dark-leaved species is a procumbent shrub, six to ten feet high, and is so called because its leaves turn black when dry. The leaves of the tea-

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leaved species do not turn black: the specific name of this species is derived from the Greek *phylake*, buckthorn, for it resembles the buckthorn. The tea-leaved willow frequents river banks: it is even more bushy than the dark-leaved willow.

The dwarf silky or creeping willow (*S. repens* — this specific name is commonly used for creeping plants since it is Latin for creeping) is confined to hill slopes and heaths. It creeps along the ground, sending up at intervals erect branches, one to three feet high, which bear the floral catkins during April. The small, oblong leaves have recurved margins. They do not appear until after the flowers.

Most willows betray an exceptional tendency to produce adventitious roots and buds. This explains why a willow stave when fixed in the ground will often take root, and also why pollarded trunks or branches give off so many adventitious branches.

How much more blest are trees than men!
Their boughs lopp'd off will grow again.

On the Loss of his Finger: GODOLPHIN

Of the poplars (*Populus* species) — also members of the family SALICACEAE — the black and the Lombardy bloom during April and May. The generic name is the Latin for poplar: the *arborpopuli* or Roman tree of the public. The outstanding difference between poplars and willows lies in their leaf-forms. Those of most willows are long and lance-shaped, whereas those of the poplars are broad and in some cases lobed. The leaf-stalks of some poplars are flattened in the vertical plane which allows them to flutter in the mildest breeze. This applies especially to the aspen. The white poplar (*P. alba*), grey poplar (*P. canescens*) and the aspen (*P. tremula*) bloomed during March (p. 140); but their leaves will be available for study during May.

The leaves of the white poplar are lobed with indented margins and the under-surfaces are covered with a thick white down. Those of the grey poplar are similar though broader and their under-surfaces are greyish. Aspen leaves tend to a circular contour, pointed at the tip: they have long leaf-stalks and are vertically flattened, so they are constantly fluttering.



BLACK POPLAR

Left, male catkin; right, female catkin

APRIL

The black or Italian poplar (*P. nigra*) is the most massive of all poplars. The leaves do not appear until May. They are large, heart-shaped with a finely serrated margins. The Lombardy poplar (*P. nigra* var. *pyramidalis*) is a variety of the black. It cannot be mistaken, for its pyramidal shape (due to the fact that its many branches grow more or less vertically) is almost unique. It grows very fast, frequently attaining a height of one hundred feet within the first thirty years. Both black and Lombardy poplars will be found in hedges and plantations, and they figure largely in the landscape gardening of town parks and squares.

Both male and female flowers are borne in separate catkins which grow on different trees. They are similar to those of the white poplar described on p. 140.

OTHER TREES AND SHRUBS WHICH MAY APPEAR DURING APRIL

(The number following each tree is the page on which it is mentioned or described)

Alder, 77	Gorse, 94
Aspen, 140	Hazel, 87
Birch, Silver, 117	Mezereon, 85
Birch, White, 117	Mistletoe, 120
Blackthorn, 122	Osier, Purple, 141
Butcher's broom, 118	Poplar, Grey, 140
Elm, Common, 92	Poplar, White, 140
Elm, English, 92	Sloe, 122
Elm, Wych, 92	Spurge laurel, 85

15

WOODS AND HEDGEROWS

Adown the meadows green
Let us go dance and play,
And look for violets in the lane,
And ramble far away
To gather primroses,
That in the woodland grow,
And hunt for oxslips, or if yet
The blades of bluebell show.

First Spring Morning (A Child's Poem) : R. BRIDGES

DURING April the second species of British violet (VIOLACEAE, Dicot., p. 90) begins to present its flowers. This is the dog violet (*Viola canina*), and it inhabits hedgerows, banks and even more open spaces. Its purplish-

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blue flowers continue to present themselves until June and sometimes until as late as August. Often so profuse is this plant with its blooms that a veritable carpet of colour appears on the banks where it grows.

Apart from the facts that the sweet violet is delicately perfumed whereas the dog violet is scentless, that all the organs of the latter are larger than those of the former, and that the times of blooming vary, there is no essential difference between the two species; in fact, the description of the sweet violet on p. 90 might well be applied to the dog violet. The flowers, apart from size, are very similar: the spur of the blue dog violet is yellowish. Cleistogamic flowers appear on the dog violet as they do on the sweet violet.

Despite its lack of smell, therefore, the dog violet is a very attractive plant which no one living in the country can help but love.

Violet! dear violet!
Thy blue eyes are only wet
With joy and love of Him who sent thee,
And for the fulfilling sense
Of that glad obedience
Which made thee all that Nature meant thee!

Song: J. R. LOWELL

Different species of violet (especially the sweet, dog and cultivated forms) have often been used in the past for making various dishes such as salads, violet vinegar, jellies, violet conserve and crystallised violets (usually the double cultivated varieties).

The strong, branching root-stocks of certain species of violet closely related to *V. canina* render them a bit of a nuisance as weeds in North America; but this seldom happens in Britain, and even in America such seductive 'gate-crashers' are treated with tolerance.

Herrick allowed his imagination to run riot when he offered his explanation for the blue colour of the violet, but it makes intriguing reading:

Love on a day, wise poets tell,
Some time in wrangling spent,
Whether the violets should excel,
Or she in sweetest scent.
But Venus having lost the day,
Poor girls, she fell on you;
And beat ye so, as some dare say,
Her blows did make ye blue.

Hesperides: HERRICK

The sweet violet has often been looked upon as the emblem of love (p. 91); the dog violet, on the other hand, is considered in some parts to be a faithless flower and lovers will not go near it. This may be because it is certainly disappointing to pick a dog violet and then find it has no smell.

The lovely lesser celandine presents its golden flowers during April; but, alas, they are all too short-lived, for they are usually past their prime

by the end of May. Sometimes, however, they appear as early as February ; but much depends on the weather.

This beautiful plant is another member of the buttercup family (RANUNCULACEAE, Dicot., p. 229), a north temperate family well represented in Britain. The lesser celandine belongs to the genus *Ranunculus* — a very large genus containing all the buttercups and crowfoots. The generic name is a diminutive of the Latin *rana*, frog, indicating that members of this genus grow where frogs live, which is largely true. The lesser celandine is *R. ficaria*, the specific name being derived from the Latin *figus*, a fig, referring to the root tubers which are very pronounced in this plant (p. 12).

It is interesting to note that though Wordsworth, the great Nature poet, wrote three poems about the lesser celandine of which the quotations on p. 156 are excerpts, yet the flower depicted on his monument at Grasmere is the greater celandine (p. 262). It seems that the sculptor made the same mistake as many others have done since, for the two plants are quite different: the lesser belongs to the buttercup family, the greater to the poppy family.

The lesser celandine flourishes in damp, cool and sheltered places, though the flowers like the sun. It is a small perennial plant growing about six inches high. The leaves have fairly long stalks bearing



Anna Jackson

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heart-shaped, glossy blades with wavy margins.

The root tubers are a means of hibernation and vegetative reproduction, for they store much food during the cold winter season when the rest of the plant has died down. Then in the lesser celandine there is another means of vegetative reproduction, that is, by means of bulbils. These are tiny bulb-like swellings which sometimes grow in the axils of the leaves. As the vegetative parts of the plant die down late in the season, these bulbils fall and rest in the soil during the winter. As spring approaches they begin to develop and produce new plants.

In structure, the golden-yellow flower is typical of the genus *Ranunculus*. There are usually three pale-green sepals, five to eight long, narrow petals (bright yellow on the upper surface, greenish brown beneath), numerous stamens and, at the centre of the flower, many free carpels. The petals react to light intensity in that they close during the evening and also when the weather is dull.

There is a flower, the lesser Celandine,
That shrinks, like many more, from cold and rain;
And, the first moment that the sun may shine,
Bright as the sun himself, 'tis out again!

The Small Celandine: WORDSWORTH

On rare occasions one might come across a double flower having several whorls of petals. As the flower dies, its petals become bleached. The fruit is a collection of dry achenes.

Ill befall the yellow flowers,
Children of the flaring hours!
Buttercups, that will be seen,
Whether we will see or no;
Others, too, of lofty mien;
They have done as worldlings do,
Taken praise that should be thine,
Little, humble, Celandine!

To the Small Celandine: WORDSWORTH

Because at one time, together with the ground ivy (p. 159) and chickweed (p. 99), the lesser celandine was used for making an ointment which was supposed to cure piles, it is sometimes, even today, known as the pilewort.

The leaves of the lesser celandine has sometimes been used as a pot-herb. Among the many local common names for this plant (some of which are confusing since they are given to other different plants) are golden guineas, smallwort, foalwort and burwort.

In more deeply sheltered places such as damp woods and copses another member of the buttercup family (RANUNCULACEAE, Dicot.) may be found. This is the goldilocks or the wood crowfoot; but it is not very common except in the south. It also belongs to the genus *Ranunculus*

(*R. auricomus*) — the specific name being derived from the Latin *aurum*, gold, and *coma*, hair or foliage. The plant is a perennial growing six to ten inches high. Its flower opens during April and continues to do so until July.

The radical leaves have long stalks and their blades are divided into three large lobes, each of which is notched. The cauline leaves (those borne on the stalks) are sessile and very deeply divided.

The yellow flowers and the fruits are similar to those of a typical buttercup (p. 229).

This plant must not be confused with another plant also called goldilocks, namely, *Chrysocoma* (*Aster*) *linosyris* of the family COMPOSITAE; but there is not much risk of this, for the latter is very rare.



RADICAL AND CAULINE LEAVES
OF GOLDILOCKS

In the hedges, by the roadsides and on the borders of woods, the greater stitchwort grows, and now it is presenting its very ornamental, white, star-like flowers. Their dazzling whiteness will continue to catch the eye of the passer-by until June or even August. In some parts, the great stitchwort is known as adder's meat and in others satin flower. It belongs to the same family (CARYOPHYLLACEAE, Dicot.) and the same genus (*Stellaria*) as the small chickweed (p. 99). The greater stitchwort is *S. holostea*. The specific name is rather puzzling. It is derived from the Greek *holos*, entire, and *osteon*, bone, it being argued by contrary meaning that it signifies bones easily broken, for the slender graceful stem of this plant easily snap off at their nodes. In fact, the stems of this plant (one to two feet high) are so long and thin that the entire plant depends on the surrounding grasses and other plants for physical support. Other authorities claim that this plant was used in ancient medicine for healing bones.

The greater stitchwort sometimes grows in clumps. It is a perennial. Its branching is characteristic of the family (which also contains camions, carnations, chickweed, etc.). Each main stem terminates in a flower, but just below this flower there are two buds opposite each other which grow out to form oblique branches. These each terminate in a flower also, having two buds just below it, and these grow out, and so on (Plate 4).

The leaves are simple, long, narrow and very pointed, with smooth margins.



Ernest G. Neal

GREATER STITCHWORT

Each flower is composed of five free sepals, five conspicuous large white deeply cloven petals, having pronounced greenish veins (*Stellaria* is from the Latin *stella*, star). There are ten stamens and three styles. The fruit is a capsule having six teeth on its upper margin.

For the first time in the year we meet a member of the mint family (LABIATAE, Dicot.), namely, the ground ivy, an attractive common plant which grows in many places, but mainly in hedgerows and on open ground.

The LABIATAE is a large family comprising about two hundred genera and more than three thousand species. Though of cosmopolitan distribution, it is centred mainly around the Mediterranean regions. There

are many British representatives. The family is highly organised, producing very irregular flowers having joined sepals and joined petals.

Ground ivy belongs to the genus *Nepeta*, a fairly small genus; it has been assigned the name *N. glechoma*. An alternative specific name is *hederacea*, from the Latin *hedera*, ivy. The generic name actually reflects its Mediterranean habitat for it is derived from the name of the town of Nepete in Etruria, a district in ancient Italy. The specific name *glechoma* is from the Greek *glechon*, pennyroyal, referring to another plant of the mint family, having leaves of a similar shape. At one time ground ivy was called alehoof or ale ivy since it was used for brewing ale, being of an aromatic nature. The Americans also call this plant ground ivy, but they have another alternative name for it, gill-over-the-ground, this referring to its use in brewing (from the French *guiller*, to ferment). At one time a tea which was sometimes called gill tea was brewed from this plant.

Ground ivy is a perennial, creeping plant with erect branches reaching a height of six to eighteen inches. It is a very acquisitive plant, and therefore may be considered to be a weed. The leaves have long stalks and their blades are kidney-shaped with wavy margins.

The flowers appear during April to June, though some may be seen

in March. They are arranged in loose whorls in the axils of the leaves, about three flowers to each whorl. Each flower is stalked.

The flower is purple and has five sepals joined to form a ten-ribbed tube with five teeth on its upper margin. The five petals are united in the form of a tube spreading at the top into two parts so constructed as to be very convenient for an insect visitor to alight upon. At the base of the corolla tube there is much nectar. The upper corolla lip forms a cleft hood which protects the stamens and styles. The lower lip forms a platform which spreads downwards into three attractive purple lobes. There are four stamens — two short and two long. The two carpels are united to form a four-chambered ovary with a long style ending in a cleft stigma. The fruit is composed of four small nuts each containing one seed.

And there upon the sod below
Ground Ivy's purple blossoms show,
Like helmet of Crusader knight,
Its anther's cross-like form of white.

BISHOP MANT

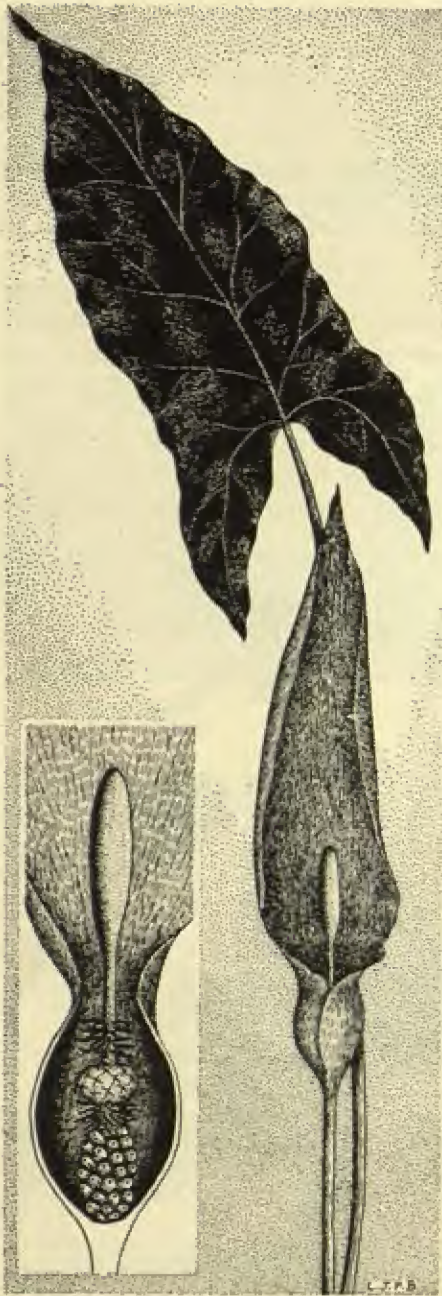
In hedgerows, beneath the canopy of the bushes, and in woods and copses where there is plenty of undergrowth, the curious yet ever-familiar pale-green spathes of the cuckoopint are now standing out against a background of dark-green, glossy leaves. This extraordinary plant has for centuries intrigued country-folk, which is reflected in the host of country common names attached to it such as wake robin, lords and ladies, cows and calves, Jack-in-the-pulpit, parson-in-the-pulpit, wild arum, passion flower and Gethsemane.

The Lords-and-Ladies dressed for
masquerade
In green silk domino discreetly
hooded,
Hurry towards the nut-tree's colon-
nade,
Philandering where privacy's well
wooded ;

The Island (from The Land) :
V. SACKVILLE-WEST



GROUND IVY .
Right, flower enlarged



CUCKOOPINT

Left, spadix and inflorescence exposed

This plant is a curious member of a curious family (ARACEAE, Monocot.) — a large family of about a hundred genera and more than a thousand species, by far the majority of which are tropical. But apart from the sweet flag (p. 393, no relative, by the way, of the flag or iris, p. 392), the cuckoopint is the only member of ARACEAE to be found growing wild in Britain. (The popular white arum 'lily' is not, of course, native to this country, though it is frequently cultivated in greenhouses. It also belongs to the ARACEAE, though in a different genus (*Zantedeschia aethiopica*).)

The cuckoopint belongs to the genus *Arum* — a European genus comprising about fifteen species. Its botanical name is *Arum maculatum*. The generic name is derived by Pliny from the Arabic *ar*, fire, referring to the burning taste of the plant; the specific name is derived from the Latin, *maculo*, spotted, for the leaves are covered with spots. It is a monocotyledonous perennial herb attaining a height of six to eighteen inches and bearing its flowers during April and May, though, since the leaves persist much longer, and the very conspicuous ripe red fruit become exposed to view during August to October, the plant is in evidence for a long season. The plant is able to carry over from one season to the next by means of a very thick persistent root-stock.

The leaves are particularly handsome, being dark green with very glossy surfaces and marked venation; their characteristic

arrowhead shape with wavy margins render them very easy to identify. There are dark-red blotches on the leaf which inspired the names passion flower and Gethsemane since the blotches were considered to represent blood from the Crucifixion.

The floral shoot of the cuckoopint is one of the most extraordinary in the British flora. The flowers are unisexual but both are borne on the same shoot. The floral shoot is composed of a tall, juicy stem terminating in a complicated structure called the spadix. This is made up of a mass of female flowers at its base. Each female flower is as simple as can be, that is, composed of one carpel only. Above the zone of female flowers is a ring of strong wavy hairs. Then above this is a zone of male flowers, each of which, like the female, is very simple, being composed only of two to four stamens. Then above this zone there is a second zone of wavy hairs which are actually sterile male flowers. They point downwards. Terminating the spadix is the long, club-shaped fleshy part which varies in colour from biscuit through pink to crimson or deep purple (*Plate 4*).

Inserted on the floral stalk just below the base of the spadix is a very large pale-green bract called the spathe. This spathe is about twice as long as the spadix. It enfolds the spadix entirely when young, but later opens out from the level of the second zone of hairs and upwards. Below this zone, the spathe is completely wrapped around the flower-bearing part of the spadix, thus forming an urn-shaped surround for the floral parts. The second zone of hairs therefore are inserted at the level of the neck of the urn. Seen at this stage, the whole floral shoot presents a grotesque figure. This has inspired the common names of Jack-in-the-pulpit and parson-in-the-pulpit.

. . . the old cuckoo pint — like an apoplectic saint in a niche of malachite.

—*Far from the Madding Crowd*: T. HARDY

The variations in colour of the upper part of the spadix inspired the common name lords and ladies, for to country-folk the biscuit-coloured and pale-pink ones were ladies, whereas the deep-coloured (and frequently more robust) ones were lords.

This entire floral arrangement forms a very effective mechanism of ensuring insect pollination, described in *Flowers in Britain* as follows.

The foetid smell of the plant attracts flies, especially midges, which crawl past the downward-curling hairs and eventually reach the ripe carpels at the bottom where nectar is to be found. The insects are probably already covered with pollen from another cuckoopint, and thus the carpels are pollinated. Now the flies are kept prisoner by the rampart of downward-pointing hairs above the zone of female flowers until all the flowers have been fertilised. Then these hairs wither and the flies are free to crawl as far as the male flowers, where they collect the ripe pollen. After that, the upper zone of hairs withers away and the flies can then escape.

The fertilised carpels ripen into large berries, first green then bright

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red, and while this is happening the rest of the floral shoot, including both spathe and spadix, withers away, leaving the cluster of berries standing out prominently in their vivid redness against the green of the hedgerow. The berries are poisonous, as also is the rest of the plant, thus protecting it from browsing animals.

The tuberous roots of the cuckoopint contain much starch, but they are also poisonous. At one time, however, the poisonous substance was washed away and the tubers used as food under the name of Portland arrowroot. Sir John Hill (1716-75) recommended the bruised roots as a remedy for the palsies — "half one of the roots, fresh gathered and bruised, will sometimes restore speech at once".

In hedgerows and on shady banks, both great and small or lesser periwinkles should now be displaying their very lovely blue flowers against a background of dark green provided by their own evergreen foliage (*Plate 4*). The small periwinkle is by far the more common.

Ah! here is the hedge along which the periwinkle breathes and twines so profusely, with its evergreen leaves shining like the myrtle, and its starry blue flowers.—*Our Village*: MARY R. MITFORD

Sometimes the flowers appear during March. The lesser form will continue to bloom until the end of May, whereas the greater will persist well into June.

The great periwinkle is not much different from the lesser, except that its leaves are more robust and its flowers larger; the leaves are sometimes also broader, tending to a heart-shape. It has been suggested that the great periwinkle is not native to this country and where it does appear it is really a local garden escape.

Among the many local common names for periwinkles are blue buttons, sorcerer's violet, cockles, joy of the ground, and pennywinkle.



SMALL PERIWINKLE

The periwinkles are long, straggling perennials. They creep for considerable distances over shaded banks and hedgerows and thickets. They are members of a large family (APOCYNACEAE, Dicot.) which is confined mainly to tropical regions where it is represented by many creepers and lianes. The periwinkles belong to the genus *Vinca* — a European and western Asiatic genus. The generic name suggests climbing and twining, since it is from the Latin *vincio*, to bind or encircle. The specific names are of obvious significance: lesser periwinkle (*V. minor*), great periwinkle (*V. major*).

Through primrose tufts in that green bower,
The periwinkle trailed its wreaths;
And 'tis my faith that every flower
Enjoys the air it breathes.

Lines Written in Early Spring: WORDSWORTH

The deep-green, simple, lance-shaped leaves are borne in opposite pairs (each consecutive pair lying in a plane at right angles to the next pair) on tough, pinkish stems.

The conspicuous blue flowers are each borne singly on long stalks which emerge from the leaf-axils. There are five sepals united at their bases, but forming a tube having five deep notches on its upper margin; five large blue petals also united at their bases, but opening out into a salver; five stamens, each joined at the base of a petal; and two carpels having a common style. The nectar is deeply seated, so pollination can be effected by long-tongued insects only. A rampart of hairs at the upper end of the corolla tube prevents other insects from crawling in and helping themselves to nectar. The fruit is composed of two splitting follicles.

Where along the hedgerow twinkle
Roguish eyes of periwinkle.

A Spring Carol: ALFRED AUSTIN

All through the ages from the ancient Greeks, periwinkles have been recommended by herbalists for their astringent virtues. It has even been claimed that they cure diabetes.

The lowly moschatel is a strange plant, for although its small, pale-green flowers are inconspicuous, it is an attractive plant by virtue of its small but handsome leaves. It is also strange in that it is one of the very few herbaceous members of a family composed almost entirely of trees (such as elder, guelder rose and wayfaring tree) and shrubs (such as honeysuckle). This is the family CAPRIFOLIACEAE, Dicot. — a family distributed mainly through north temperate regions and the mountainous zones of the tropics.

The moschatel is fairly common, though it tends to be localised: where it does occur, however, it forms masses, mainly in shady woods. It blooms during April and May. It is a small, perennial herb, growing



MOSCHATEL

Bottom right, flower enlarged

three to six inches high. It is able to tide itself over the winter and vegetatively spread by means of a thick, creeping underground root-stock — that is why it is sometimes called tuberous moschatel.

Moschatel belongs to the genus *Adoxa*; in fact, it is the sole representative of the genus. It has been assigned the full name of *Adoxa moschatellina*. The generic name is from the Greek *adoxos*, obscure, referring to its insignificance. It has a faint musky odour, and this is indicated in the specific name which is derived from the Greek *moschos*, musk. In some localities the plant is considered to be of such little account that it is called gloryless.

The handsome radical leaves (those growing from ground-level) are divided into three lobes, and each of these lobes is again subdivided into three deeply notched lobes. The cauline leaves (those borne on

the aerial stalks) are divided once only into three notched lobes.

The insignificant flowers emerge in terminal heads, five flowers to each head. There is a terminal flower facing upwards and the other four are inserted around its base. Each flower is very small, having five united sepals, five alternating yellowish-green petals united at their bases but then spreading into a salver. Each of the five stamens is divided almost down to its base. Then there are three to five carpels fused to form an ovary with an equivalent number of styles. Sometimes the parts of the terminal flower are in fours. The musky smell of the flower attracts small insects which pollinate it. The fruit is a small, green drupe containing several seeds.

Unlike its close relative the common cowslip (p. 232) which grows in open meadows, the rare oxlip (*Primula elatior*) grows in woods, and blooms during April and May; but it is confined to the woods of eastern England, and even there it is rare. The oxlip is in all fundamentals similar to the

cowslip, though the two cannot be confused for the oxlip is larger in general vegetative habit (*elatio*r is derived from the Latin meaning taller or exalted). Furthermore the flowers themselves are larger; they are also of a paler yellow and their petals flatten out into a salver more like those of the primrose.

In open woods, along hedgebanks and on other shaded banks we ought now to be able to find in flower another plant which will introduce us to an important, though admittedly difficult family, the UMBELLIFERAE, Dicot. The plant in question is the wild beaked parsley, sometimes also known as keck.

The UMBELLIFERAE is a cosmopolitan family of about two hundred genera and nearly three thousand species, most of which are distributed in the north temperate regions of the world. There are many representatives of the family in Britain, and some of them are so alike as to render the entire family a very difficult one to study. Certain wild members of the family are the forbears of cultivated plants such as carrot (*Daucus carota*), celery (*Apium graveolens*), parsnip (*Peucedanum sativum*), parsley (*Petroselinum crispum*) and quite a number which figure in herb gardens.

Most members of the family have very attractive, finely divided fern-like leaves; but the main diagnostic feature of the family is the inflorescence. In all cases the flowers are small. Each is stalked, and about seven to twelve floral stalks come off from the same point on the stem. This type of inflorescence is called an umbel, though it is by no means confined to the UMBELLIFERAE (we have already seen it in the yellow star of Bethlehem (p. 116) and in the oxlip (p. 164). But in the UMBELLIFERAE the inflorescence is usually more complex, for it is frequently not a simple umbel. About ten to twenty umbels themselves are inserted on the stem at a single point, so that the entire inflorescence is actually an umbel of umbels. The wild beaked parsley is a good example of this. Where the flower stalks meet at the base of the minor umbel



Ernest G. Neal

OXLIP AND PRIMROSE GROWING
TOGETHER



WILD BEAKED PARSLEY

Showing leaves, flowers borne in an umbel of umbels (compound), and a collection of fruit.
Top left, single fruit splitting and a single flower in section and undergoing self-pollination

there are usually a few boat-shaped bracts, and sometimes the same can be said of the base of the major umbel.

The flowers of the UMBELLIFERÆ are white, cream or yellow, though mainly white or cream. Each has five free sepals; five free notched petals (sometimes of unequal size); five stamens alternating in position with the petals; and two carpels which are fused to form an ovary bearing two short separate styles. The fruit is also characteristic of the family, being a splitting schizocarp. When ripe it splits into two halves, each of which hangs from a central stalk. The fruit-wall has several ridges passing down it longitudinally and in some cases within the fruit-wall canals are embedded, these containing an aromatic oil.

Flies usually pollinate the umbelliferous flower; but if they fail to do so then self-pollination is effected by the simple expedient of the stamens bending inwards and the styles bending outwards with the result that the ripe anther and the stigma meet (see illustration above).

In most umbellifers, the stem is hollow except at the node where there is a partition of soft, white pith.

The wild beaked parsley or keck begins blooming in April and continues to do so until the middle of June. It is a perennial, attaining a height of anything from one to four feet. It belongs to the genus *Anthriscus* (*A. sylvestris*) — a fairly small genus, deriving its name from the Greek *antherix*, a hollow stalk. The fact that the plant inhabits woods and hedges is indicated in the Latin specific name. Its small flowers are white.

In woods and thickets and sometimes in pastures on calcareous soils two rare plants may be found blooming at this time of the year; but they occur very locally so the chances of finding them are not great. They are the white star of Bethlehem and the spider orchis — both Monocotyledons, but members of different families.

The white star of Bethlehem, though comparatively rare, is not so rare as its relative the yellow star of Bethlehem (*Gagea lutea*) which begins blooming in March. Both are members of the same family, LILIACEAE, Monocot., but of different genera (p. 116). The star of Bethlehem is white, and its flowers are borne in clusters on a common flowering stalk, though each flower is inserted on the stalk at a different level. Yet the flower-heads are all on the same level, for the lower a flower is inserted on the common stalk, then the longer is its own individual stalk. For this reason, the botanical name for the star of Bethlehem (*Ornithogalum umbellatum*) is unfortunate, for the specific name is misleading. The generic name is derived from the Greek *ornis*, bird, and *gala*, milk.

The fundamental structure of the flower is typically monocotyledonous, and, apart from colour (white) and size (larger), very similar to that of the yellow star of Bethlehem (p. 116). The leaves are long and ribbon-like and all emerge from the bulb at just below ground-level.

There are two other species of white star of Bethlehem, the spiked star of Bethlehem (*O. pyrenaicum*) whose inflorescence is a spike and contains many more flowers, and the drooping star of Bethlehem (*O. nutans*), whose flowers hang (*nutans* is Latin for nodding) and their perianth segments are reflexed. The spiked species also occurs in woods; the drooping species in watery copses and shrubberies. The drooping species begins blooming in April, like *O. umbellatum*, but it continues to do so until the end of May. The spiked species does not flower until June and July.

The other rare plant which blooms in a few woods and calcareous pastures is the spider orchis. It is now in flower and will continue to be so until about the end of May. It belongs to the family ORCHIDACEAE, Monocot.; but it is so rare that we will leave consideration of this intriguing family until we meet a more common representative (p. 209). The spider orchis flower has yellowish-green outer perianth segments

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with a dull-brown, variously marked labellum (p. 209), and it is downy. It has been named *Ophrys aranifera*, the generic name coming from the Greek for eyebrow (from the marks on the labellum), and the specific name from the Latin *aranea*, spider, for the whole flower superficially resembles that animal.

For the first time this year we meet a flowering plant which is entirely parasitic — so parasitic that it has lost its own food factories, that is, the green leaves. These have been reduced to insignificant scales. This plant is the great toothwort which belongs to a family — the OROBANCHACEAE, Dicot. — which comprises nothing but parasitic plants. In some parts the great toothwort is called lungwort. In the same family are the broomrapes; so again here, since the broomrapes are more common, detailed consideration of the family will be deferred until a broomrape appears upon the scene (p. 240).

There is only one toothwort at all common in Britain, namely, that which grows in woods and copses and is parasitic on the roots of hazels and beeches. This is *Lathraea squamaria*, a perennial. The generic name is from the Greek *lathraios*, hidden, referring to the plant's habit; the specific name is from the Latin *squama*, a scale, indicating that the creeping underground stem or rhizome is covered with scales (in four rows).



GREAT TOOTHWORT

Anne Jackson

Suckers emerge from the rhizome and these penetrate the roots of the host plants (beeches and hazels, etc.) and thus derive the requisite food for the plants. Periodically erect shoots, about ten inches high, are sent up, and these bear the flowers during April and May. On the stalks of such shoots the insignificant scale-leaves are borne.

The purplish flowers are conspicuous, being borne in robust, one-sided racemes. To each flower there are usually four sepals united to form a notched tube. The purple petals are also united to form a two-lipped corolla, the upper lip being cleft into two, and the lower into three parts. There are four stamens, two short and two long, each being attached to the corolla tube near its base. The two carpels are fused to form a single-chambered ovary with a long style surmounted by a two-lobed stigma. The sepals persist after fertilisation to surround the fruit, which is a capsule that eventually explodes to release its seeds. When the capsules are about half ripe they appear very like human teeth, hence the common name of this plant.

There is a much rarer toothwort — *L. clandestina* (the specific name being from the Latin for hidden or secret) — which is parasitic on the roots of willows.



GREAT TOOTHWORT

Right, flower enlarged and in section

OTHER FLOWERS WHICH MAY APPEAR IN WOODS OR HEDGEROWS DURING APRIL

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FIELDS, WASTE PLACES AND HEATHS

When April rain had laughed the land
Out of its wintry way,
And coaxed all growing things to greet
With gracious garb the May.

While April Rain went by: SHAEMAS O'SHEEL

FIELDS AND PASTURES

THE grass in the fields and pastures is now beginning to look lush; at least one, the meadow foxtail, will bloom this month.

The true grasses are members of one of the most important of flowering plant families, namely, the GRAMINEAE, Monocot. To this family also belong those plants which yield valuable cereals and other important products such as wheat (*Triticum vulgare*, etc.), barley (*Hordeum vulgare*, etc.), oats (*Avena sativa*), rye (*Secale cereale*), maize (*Zea mays*), millet (*Panicum* species), rice (*Oryza sativa*), sugar cane (*Saccharum officinarum*), bamboos (*Bambusa* species) and esparto grasses (*Lygeum spartum*, *Stipa tenacissima*, etc.). So it might be said with justification that to man the GRAMINEAE is the most important of all plant families, for it gives basic food products.

The GRAMINEAE is distributed throughout the world and contains more than five hundred genera which embrace over five thousand species. In fact, there is scarcely any part of the world where flowering plants will grow that does not boast a certain number of species of grass.

APRIL

Here I come creeping, creeping everywhere;
 My humble song of praise,
 Most joyfully I raise
 To Him at whose command
 I beautify the land
 Creeping, silently creeping everywhere.

The Voice of the Grass : SARAH ROBERTS BOYLE

The name of the family is derived from the Latin, *gramen*, grass.

A typical grass was described in *Flowers in Britain* as follows: Most grasses are herbaceous with fibrous root systems, though some tropical forms such as bamboos attain a height of more than a hundred feet. Many grasses are perennials and reproduce themselves vegetatively by means of underground stems (for example, couch grass, p. 371) or runners (for example, common bent. In most cases the internodes



FLORAL STRUCTURE OF GRASSES

Left, 1, ear, and 2, whole plant of bearded wheat; 3, ear of beardless wheat; *a*, axis of ear; *b*, spikelet; *c*, fruit; *d*, flower. *Top right*, inflorescence of oat. *Bottom right*, meadow fescue; *A*, a spikelet with two open flowers; *B*, flower from which the outer pale has been removed

of the stem are hollow, though in maize they are full of soft pith. The leaves are characteristically linear and are arranged on the stem alternatively in two ranks. Few grasses have stalked leaves, but each leaf has a sheathing base which surrounds the stem. On the upper surface where the leaf-sheath joins the leaf-blade there is a small membranous growth called a ligule.

The flowers are usually hermaphrodite and are borne in groups called spikelets which are enclosed in bracts called glumes. There is no perianth to the flower. The stamens are very conspicuous, and there are usually three. Each anther is borne on a long thin stalk. There is one carpel with two feathery styles. The ovary is single-chambered and contains one ovule. The fruit is called a caryopsis. This is well exemplified in the wheat grain. Though this grain, like other graminaceous grains, is often called a seed it is actually the fruit. After fertilisation, the fruit undergoes little change except to grow larger, and in this respect it resembles the buttercup achene. But between the wheat grain and the buttercup achene there is one important difference: whereas the seed of the achene remains enclosed within the fruit-wall but separate from it, in the case of the caryopsis the fruit-wall fuses with the outer coat of the seed. So the entire grain is solid.

The appearance of the inflorescences of grasses varies according to whether the stalks of the spikelets are long and spreading outwards from the stem, as in oat or quaking grass (p. 322); short, as in the meadow fescue (p. 320); or absent, as in wheat, meadow foxtail (p. 173) and perennial rye grass (p. 320). Each spikelet of flowers is subtended by a glume and each flower in the spikelet is protected by two bracts called palea. In some cases the outer pale bears a long bristle called an awn. This is very evident in some grasses and in such cereal plants as oat, barley and bearded wheat.

Most grasses are pollinated through the agency of wind, though in the majority of cereals self-pollination takes place. The fruit is also usually light enough to be disseminated by wind.

The meadow foxtail can now be found in bloom in meadows and pastures and many other grassy places. It belongs to the genus *Alopecurus* (from the Greek *alopex*, a fox, and *oura*, a tail), since in this grass after the stamens have wilted the entire spike looks like a fox's brush; the specific name for this plant is *pratensis* (*A. pratensis*), from the Latin *pratium*, a meadow. The meadow foxtail is a perennial growing one to three feet high and blooming during April to June. The long linear leaves have rough edges, and the spikes are closely compressed. This grass is frequently sown in order to ensure a good pasturage.

Near the GRAMINEAE in the evolutionary scale is the family of true rushes, the JUNCACEAE, Monocot., and an example of this family, namely the field wood-rush, will now be blooming. It grows in pastures, but is

not very conspicuous, attaining a height of only four to eleven inches. It is a perennial. Since it is not a conspicuous example of the family, it will not be considered in detail. The family itself is dealt with in more detail on p. 318.

The field wood-rush belongs to the genus *Luzula*, a fairly large genus comprising sixty-odd species, of which six are British. The generic name has been derived by some from the Latin *lucus*, a wood, though there is some doubt about this. The field wood-rush is *L. campestris*, the specific name coming from the Latin *campus*, flat country. The plant has a creeping underground stem which sends up leafy aerial shoots. The lanceolate leaves are hairy. The flowers, which appear during April to June, are borne in clusters of three or four. Each flower is regular, and typically monocotyledonous, having six sepaloid perianth segments, six stamens alternating with these, and three carpels fused to form a three-chambered ovary with a long style terminated by three large, brush-like stigmas.

Among the several mouse-ear chickweeds, the common and the field mouse-ear chickweeds are now in flower, and will continue to bloom for a long season, that is, until September. Though these chickweeds are close relatives of the small chickweed (*Stellaria media*) which blooms throughout most of the year (p. 99) and so belong to the same family (CARYOPHYLLACEAE, Dicot.), they differ to a sufficient extent to warrant being placed in another genus, namely, *Cerastium*. This name indicates that the fruit capsules stick out like horns from the surrounding calyx (Greek, *keras*, horn).

The common mouse-ear chickweed is *C. vulgatum*, and the field, *C. arvense*.



MEADOW FOXTAIL GRASS

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Both frequent fields; the latter most often on calcareous soils. The field species is perennial, whereas though the common species is sometimes also perennial it is frequently only biennial. Both vary in height from about four to twelve inches, though the common is usually taller and more robust than the field. Unlike the small chickweed, the common mouse-ear grows hairs all round its stem; the field mouse-ear bears scarcely any hairs. The leaves of the common are hairy and ovoid; those of the field are lance-shaped and smooth. On the other hand, the flower of the common mouse-ear are larger than those of the field. Both are white and both are similar to that of the small chickweed with the exception that in the two former there are invariably five styles to the ovary.

The common mouse-ear chickweed is sometimes a nuisance as a weed on cultivated ground and even on lawns, where it is advisable to discourage it by spraying with an iron sulphate solution.

The hairy dog violet (*Viola hirta*, the specific name being derived from the Latin for shaggy or rough) may now be seen in bloom, but it is not so common as *Viola canina* (p. 153). It is confined mainly to pastures on dry calcareous soils. It is somewhat more robust than *V. canina*; but, like it, it is a perennial blooming during April to June. The leaves of the hairy dog violet are, as the name implies, covered with fine hairs. The flowers vary in colour, though there are most frequently deep blue, and the floral spur is hooked. Unlike the sweet violet (*V. odorata*), this species has no stolons.

In dry pastures and on sandy banks, the yellow-and-blue or parti-coloured scorpion grass (*Myosotis versicolor*) is now beginning to bloom. The scorpion grasses, which include the forget-me-not, are all members of the genus *Myosotis* which is included in the family BORAGINACEAE, Dicot. (p. 272). The generic name reflects the shape of the leaves which resemble mouse's ears (Greek, *mys*, a mouse; *ous*, an ear). The yellow-and-blue scorpion grass is not particularly common, so it will not be considered in detail except to say that it closely resembles the forget-me-not apart from the fact that its flowers are yellow when young and then turn a dull blue when they open out. The specific name *versicolor* is Latin, meaning changing colour. All the scorpion grasses are so called because their spike-like inflorescences are curiously twisted backwards so that they resemble a scorpion's tail.

The yellow-and-blue scorpion grass blooms during April to July. Another comparatively rare example is the early scorpion grass (*M. collina*), so named specifically because it grows in hilly districts. It sometimes also appears on old walls. Its flowers are bright blue. It also appears early in April, but usually finishes blooming in May. It is probably the species to which Clare refers in the verse :

APRIL

The little blue Forget-me-not
Comes too on friendship's gentle plea,
Spring's messenger in every spot,
Smiling on all, — "Remember me!"
On May Morning: J. CLARE

HEATHS AND DOWNS

No common new arrivals to the flora of downs and heaths are to be expected during April: but there are a few less common examples, some of which are worthy of mention.

The field or heath lousewort, sometimes known as the dwarf red-rattle, appears on moist heaths during April and continues to bloom until July. It belongs to the well-known family SCROPHULARIACEAE, Dicot. (p. 226) which contains several semi-parasites such as eyebright (p. 257), red bartsia (p. 367), etc. The heath lousewort is also semi-parasitic, though not entirely so, for it has its own green leaves. But beneath the soil it does send out suckers which penetrate the roots of grasses and thus supplement the plant's own food supply. The plant is a procumbent perennial, bearing fleshy divided leaves and pink two-lipped flowers similar in structure to those of bartsia and eyebright (p. 257), though in the case of the heath lousewort the calyx is somewhat inflated, and has four or five serrated lobes. This plant has been assigned to the genus *Pedicularis* (*P. sylvatica*), the generic name being derived from the Latin *pediculus*, a louse, possibly suggesting that the plant kills those lice which are parasitic on sheep.

On damp heaths, the rare blinks or water chickweed may be found, though it often inhabits more watery places. It belongs to the small family PORTULACACEAE (it is in no way related to the common chickweeds), a family more familiar to American botanists than British, though in Britain the genera *Portulaca*, *Calandrinia* and *Lewisia* are popular among some gardeners.¹

The only genera indigenous to Britain are *Claytonia* (though even this is doubtful) and *Montia* to which blinks (*M. fontana*) belongs. The genus was named after Professor G. Monti, the eighteenth-century professor of botany in the University of Bologna.

Blinks is an insignificant annual plant growing one to three inches high, but of spreading habit. The small, oval, rather succulent leaves are arranged in pairs and the small white flowers are borne on stalks towards the ends of the branches. The flowers appear over a fairly long season (April to August). To each flower there is a pair of very small green sepals united at their bases; four small, boat-shaped white petals; three stamens; and a single-chambered ovary surmounted by five

¹ *Flowers in Britain*, by L. J. F. Brimble, p. 85.

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separate styles. The fruit is a capsule containing three small black seeds, each of which is covered with tubercles.

On calcareous downs, but only in a few localities, the pasque flower (*Anemone pulsatilla*) presents its purple flowers during April and May. It is a perennial growing four to eight inches high and is very closely related to the wood anemone (*A. nemorosa*, RANUNCULACEAE, Dicot., p. 104); but in the case of the pasque flower the deeply cut foliar bracts are sessile, the foliage leaves are more deeply divided, the entire plant is very hairy, and the flowers slightly larger than those of the wood anemone.

The Pasque-flow'r which ignores
A date the moon ordained, but takes its rule
From sun and rain, as both by chance occur;

The Garden: V. SACKVILLE-WEST

The common name for the pasque flower is derived from the original *pasce* flower (surpassing flower). The specific name is from the Latin *pulso*, to disturb (*cf.* wood anemone). In some parts the plant is known as Dane's blood, since it was believed to have grown only where blood



PASQUE FLOWER

Ernest G. Neal



DOVE'S-FOOT CRANE'S BILL

of the invading Danes had been shed ; though the connexion of this flower with bloodshed goes still further back.

Where the blood was shed,
A flower began to rear its purple head :
Such as on Punic apples is reveal'd,
Or in the filmy ruin but half conceal'd,
Still here the fate of lovely form we see,
So sudden fades the sweet anemone.

OVID

WASTE PLACES

In waste places, on cultivated ground, and even along more open hedgerows, the showy pink dove's-foot crane's bill is now blooming, and will continue to do so until well into September. Though not so compelling of attention as its close relative the meadow crane's bill (p. 333), it is indeed attractive. It belongs to the geranium family (GERANIACEAE, Dicot.) — not a very large family but a well-known one, for it includes the cultivated species of *Geranium* and *Pelargonium*.

The crane's bills belong to the genus *Geranium*. The derivation of this name is amusing, for it comes from the Greek *geranos*, a stork, since the fruit (p. 30) is like that of a stork's bill ; yet in the same family there is another genus *Erodium* which contains what are commonly called the stork's bills (p. 255), and this second generic name is from the Greek *erodius*, a heron.

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The dove's-foot crane's bill is *Geranium molle*. It is an annual, presenting its flowers during April to September, attaining a height of six to twelve inches. It is closely similar to the meadow crane's bill (p. 333) and herb Robert (p. 225). The handsome, shield-shaped leaves are palmate and divided. They, like the stems, are covered with hairs. They turn a brilliant crimson during the autumn (p. 583).

The flower is typical of the family. There are five, boat-shaped sepals; five free, pink, notched petals; ten stamens; and five carpels fused to form a single ovary surmounted by a single style divided at the tip into five stigmas. The fruit is particularly interesting in its method or mechanical dispersal (p. 30).

It is rather staggering to learn that the great sixteenth-seventeenth-century herbalist, John Gerard, claimed to have cured himself of a rupture with a powder made from the dove's-foot crane's bill. Today the plant is not recognised as having any medicinal virtues.

The narrow-leaved vetch (*Vicia angustifolia*) now blooms in dry waste places and dry fields and will continue to do so until July. It is not particularly common, so examination of the vetches (all of which belong to the pea family, LEGUMINOSAE, Dicot.) will be delayed until a more common form appears in flower (p. 225). The flowers of the narrow-leaved vetch are pink and they are usually born solitary.

OTHER FLOWERS WHICH MAY APPEAR IN FIELDS, WASTE PLACES AND HEATHS DURING APRIL

(The number following each flower is the page on which it is mentioned or described)

Aconite, Winter, 86	Elm, Wych, 92
Box, 147	Furze, Gorse, 95
Chickweed, Small, 99	Pickpocket, 97
Crocus, 134	Shepherd's purse, 97
Daisy, 126	Whin, 95
Dandelion, 128	Whitlow grass, 135

WEEDS

APRIL produces quite a crop of new weeds in cornfields, though none is a very serious pest.

The buttercup family (RANUNCULACEAE, Dicot., p. 229) is represented by the not very common but curious mouse-tail which is abundant in





some cornfields. It is a small annual growing two to four inches high, having long, linear, somewhat fleshy leaves all emerging from ground-level. The yellowish-green flowers appear during April to June.

The mouse-tail belongs to the genus *Myosurus* — a small temperate genus, the significance of whose name will be recognised after an examination of the flower, for therein lies the curious appearance of the plant. The only representative of the genus *Myosurus* in Britain is the insignificant mouse-tail (*M. minimus*).

There are five comparatively large greenish sepals, each of which is spurred. The five petals are long and strap-shaped, the upper half of each suddenly bending outwards. There are many stamens and carpels — all free, and these are borne on a specially elongated receptacle. After fertilisation, the separate fruits (which are achenes, as they are in the buttercup), crowded as they are on the long receptacle which gets longer still after fertilisation, give the impression of a mouse's tail — hence the common and generic names (Greek *mys*, a mouse, and *oura*, a tail).



MOUSE-TAIL

Bottom right, flower enlarged

The red or purple deadnettle blooms over a very long season, though it does not often break into bloom until April unless conditions are especially favourable; then it continues to flower until October (Plate 4).

The plant belongs to the important mint family (LABIATAE, Dicot., p. 158). It is included in the genus *Lamium*, a fairly large genus containing five British species, of which perhaps the most familiar is the white deadnettle (p. 222). The name is derived from the Greek *laimos*, throat, referring to the shape of the corolla (already described in the ground ivy, p. 158).

The red deadnettle is *L. purpureum*. It grows in waste places and on cultivated ground. It is a very common annual growing four to eighteen inches high. As in most members of this family, the stem is square in cross-section. The leaves are arranged in opposite pairs. Both leaves and stems are tinged with red. The leaves are heart-shaped and their margins are serrated, though the resulting notches are not so sharply toothed as are those of the white deadnettle; furthermore, they are stalked. The flowers are borne in whorls in the axils of those pairs of leaves near the ends of the shoots. Each flower is reddish-purple. The fundamental structure is similar to that of the ground ivy (p. 158). The

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lower lip of the corolla is like an inverted heart flanked by two tooth-like lobes.

The corn or field woundwort is another member of the LABIATAE, but it belongs to the genus *Stachys*, a large genus well distributed throughout the world (except Australia) and having five representatives in Britain. All members of the genus bear their flowers in spikes of whorls; the generic name is from the Greek *stachys*, spike. Corn woundwort is *S. arvensis*.

The plant grows, as its name implies, in cornfields; but it also grows on other cultivated ground. It has weak procumbent stems which might also grow aerially to a height of up to eighteen inches. It is an annual with a long flowering season from April to November.

The leaves are arranged in opposite pairs; each is oval and broadly serrated. The flowers are arranged in whorls typical of the family (usually six flowers to each whorl). The flower is typically labiate. The calyx is covered with long hairs, and the long corolla tube is white, shading to pink at the lobes.

The important genus *Veronica* of the family SCROPHULARIACEAE, Dicot., is represented in Britain by a number of common plants including the brooklime and the speedwells, and during most of April one representative, the field or green field speedwell (*V. agrestis*), appears blooming on cultivated ground and other places. But it, like the heath lousewort (p. 175), is not so common as other representatives, such as the germander speedwell, so detailed consideration of this family will still be deferred (p. 226). According to some authorities the generic name has been given in honour of St. Veronica, while others consider it is from the Greek *pherenikos*, victorious. The specific name *agrestis* signifies growing in a field, from the Latin *ager*, field.

Unhealed we wait, my Speedwell, whom they name
Veronica, namesake of the woman blest
With Love's true image; (Speedwell, have I guessed
Your title's meaning?).

Footsteps of Proserpine: NEWMAN HOWARD

The field speedwell is a procumbent annual growing four to eight inches high, presenting its blue flowers during April to September. Sometimes, however, the plant is in bloom much earlier in the year. A few other species of *Veronica* are also annual; but most are perennial.

The shoots of the field speedwell are much branched but less robust than most speedwells. Unlike the more common speedwells, the leaves are not borne in pairs, and each leaf is heart-shaped though having deeply serrated margins. The flowers are borne solitary on long, thin axillary stalks. There are four green, hairy sepals. Of the four petals, one is

large, that opposite it is small, and the two alternating with these are of medium size though equal to each other. The small petal is invariably white, and the others usually blue; sometimes, however, but rarely, all four petals are white. They are fused at their bases. There are two stamens and two carpels, the latter joined to form a two-chambered ovary with a single style. The fruit is a capsule with two pronounced turgid lobes.

The first representative of the bedstraw family (RUBIACEAE, Dicot.) now presents its lilac-coloured flowers, and continues to do so until October. This is the field madder, a common weed of cornfields and other cultivated ground.

The RUBIACEAE is one of the largest of flowering plant families, comprising about three hundred and fifty genera and nearly six thousand species; but most of these are tropical and embrace certain plants of economic importance such as *Coffea arabica* (yielding coffee), *Cinchona* species (yielding quinine), *Gardenia* species (presenting handsome, sweet perfumed flowers), *Psychotria ipecacuanha* (yielding ipecacuanha), and so forth. The British members of the family are of little or no economic importance, but comprise such common examples as goose-grass (p. 314), the bedstraws (pp. 334, etc.), wood-ruff (p. 215), etc.

The field madder is the sole British representative of the small genus *Sherardia* (named after the botanist W. Sherard, 1659-1728). It is specifically designated *S. arvensis*, and is a small much-branched annual growing from four to twelve inches high. The small lance-shaped leaves are borne in whorls of four to six. The flowers are grouped in umbels of four to six at the tips of the branch stems. Each flower is sessile. The small hairy calyx is formed from six sepals joined to produce a six-toothed cup. The four petals are of a lilac colour and are joined to produce a long, neat slender tube spreading at the top into four oval lobes. There are four stamens, and the stigma is divided into two lobes.

A member of the valerian family (VALERIANACEAE, Dicot., p. 290) is now blooming in cornfields and also along some hedgerows. This is lamb's lettuce or corn salad (*Valerianella olitoria*). The generic name is a diminutive of *Valeriana* (p. 290), from the Latin *valeo*, to be healthy (some species of *Valeriana* have medicinal virtues). The specific name means culinary.

The plant is an annual, growing anything from two to twelve inches high and blooming during April to June.

The elongated oval leaves form a ground-level rosette and others are arranged in pairs on the stalks. Their margins are very irregularly serrated by the presence of a few notches. The blue flowers are borne in dense terminal cymes. Each flower is typical of the family, therefore very like a valerian flower (p. 290).

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In certain parts of Europe the corn salad is cultivated as a pot-herb and a salad. But the leaves are rather tasteless and therefore usually served with more tasty leaves.

OTHER FLOWERS WHICH MAY APPEAR ON CULTIVATED GROUND DURING APRIL

(The number following each flower is the page on which it is mentioned or described)

Chickweed, Small, 99

Colt's foot, 130

Crocus, 134

Daisy, 126

Dandelion, 113

Ground ivy, 158

Groundsel, 98

Shepherd's purse, 97

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OLD WALLS

THE wallflower is a doubtful character, for, though it often appears on old walls and buildings apparently in the wild state, it is most probably a garden escape. In the garden, of course, beautiful varieties of this popular flower are cultivated. For centuries it has also been called the gilliflower, but this name has been given to others, such as the stock. The French for gilliflower is *giroflée*; for the wallflower it is *giroflée jaune*.

A golden gilliflower today
I wore upon my helm alway,
And won the prize of this tourney
Hah! hah! la bellejaune giroflée.

The Gilliflower of Gold: WILLIAM MORRIS

The wallflower growing in the wild state is usually orange in colour, though sometimes it is splashed with reddish-brown spots which explains the old English name bloody warriors.

The yellow wall-flower, stained with iron brown

The Seasons (Spring): JAMES THOMSON

The wallflower is a member of the well-known family CRUCIFERAE, Dicot., which has already been met this year through shepherd's purse (p. 97). It belongs to the genus *Cheiranthus* — a fairly large genus represented in Britain (at any rate in the wild state) only by the wallflower (*C. cheiri*). The generic name has a double derivation, namely, the Arabic *kheyri* and Greek *anthos*, a sweet-smelling flower. The specific name has a similar derivation; it has no connexion with the Greek *cheir*, a hand.

APRIL

The plant is perennial and grows six to eighteen inches high, blooming at its best during April and May.

The lance-shaped leaves emerge both radically and crowded up the stem.

The large flowers are borne in dense racemes. The floral structure is very typical of this important family. There are four long, purplish, free sepals. Alternating with these are the four free petals. Each petal is heart-shaped, but its lower end is elongated and stretches the entire length of the loose tube formed by the erect sepals. Above the calyx, the four petals spread into the typical cruciform salver. There are two whorls of stamens — an outer whorl of two short ones and an inner whorl of four long ones. Nectaries are inserted at the bases of the stamens. The two carpels are joined along their margins forming an ovary down the centre of which there is a tissue-like partition. The style is stunted, but there are two stigmas.

The fruit forms what is called a siliqua (p. 31). When ripe the carpellary walls begin to break away from the central partition from the bottom upwards. Thus the erect partition, with ripe seeds on both sides, is exposed. The light seeds are easily disseminated by the wind.

How the wallflower first arrived, Herrick described thus :

Understand, this firstling was
Once a brisk and bonnie lass,
Kept as close as Danae was :
Who a sprightly sprangall lov'd,
And to have it fairly prov'd,
Up she got upon a wall,
Tempting down to slide withal :
But the silken twist untied,
So she fell, and, bruis'd, she died,
Love in pity of the deed,
And her loving-luckless speed,
Turn'd her to this plant we call
Now the *Flower of the Wall*.

Hesperides : HERRICK

The wall speedwell (*Veronica arvensis*) is a small annual member of the speedwell group (family, SCROPHULARIACEAE, Dicot.), about the same size as the field speedwell (p. 180), though its branches are not procumbent but erect, and the blue flowers are borne in crowded terminal inflorescences. They appear during April to July. Both leaves and flowers are similar to those of the field speedwell.

The rue-leaved or three-fingered saxifrage, now blooming on old walls and sometimes on dry, sandy soil, introduces the family SAXIFRAGACEAE, Dicot. ; though the meadow saxifrage (p. 238) is a more common example. The family comprises about seventy genera and nearly seven hundred species, most of which are confined to temperate regions. The majority are herbs, though there are also a few shrubs and trees (but none British).

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Many species favour arctic and alpine habitats, and some have fleshy leaves. For this reason, some species of saxifrage are grown in rock gardens.

The rue-leaved saxifrage (*Saxifraga tridactylites*) belongs to the most important British genus. Some members of the genus grow in dry situations and have thus developed an appropriate habit such as tufted leaves, hairy stems and leaves. Many reproduce themselves vegetatively by means of runners or offsets. The origin of the generic name is interesting for it is derived from the Latin *saxum*, a rock, and *frango*, to break. It has been suggested that this might indicate that the roots penetrate the crevices between the rocks and thus break them apart; but most authorities favour the view that the true origin is based on the one-time practice of administering decoctions of saxifrage to patients suffering from stones in the bladder in order to disintegrate such artefacts.

Saxifrage is good, and Hart's-tongue for the stone.

Poly-Olbion: DRAYTON

The rue-leaved saxifrage — a small annual growing two to five inches high — is not very typical of the family, for its radical leaves do not present a pronounced rosette. Those leaves borne on the lower parts of the stem are cleft into three (reflected in the specific and the alternative common names); each 'finger' is sometimes deeply notched once or twice. The leaves on the upper parts of the stems are simple and lance-shaped.

The entire plant is covered with glandular hairs, and both stems and leaves usually present a reddish tinge.

The small flowers appear during April to July, and they are typical of the genus as a whole. They are arranged in very loose panicles, each flower being borne on a long stalk. There are five free sepals, five comparatively large white petals forming a salver, ten stamens and two carpels joined together but diverging at the top. The fruit is a two-chambered capsule.

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MARSHES, RIVER BANKS AND COASTAL AREAS

MARSHES, RIVER BANKS AND DAMP MEADOWS

MARSHES, moist meadows and other damp areas are in general colder habitats than most, so it is not surprising that the flora of such sites does not bestir itself until late in the season. It is true that

the marsh marigold and the butterbur have already begun blooming (pp. 138, 140); but not until well into April does one become really aware of a flora typical of damp situations. And now in the month of April several important marsh-loving members of the British flora are blooming; and among these are three members of the CRUCIFERAE, Dicot. (p. 95), namely, cuckoo flower or meadow bitter-cress, hairy bitter-cress and large-flowered bitter-cress.

The cuckoo flower begins to present its lovely pale lilac or white flowers in April and continues to do so until June. This plant has a number of other common names such as

lady's smock, meadow bitter-cress and, more locally, milk maids. It grows in marshes and moist meadows. It is a perennial, achieving a height of anything from nine inches to two feet. Together with the other two bitter-crests which also begin blooming this month, it is a member of the genus *Cardamine*—a large temperate genus comprising about a hundred species of which half a dozen are British. The generic name is from the Greek for cress, though some authorities claim that it is derived from the Greek *kardia*, heart, and *damao*, to suppress, indicating a sedative. The cuckoo flower is *C. pratensis* (from the Latin, *pratium*, a meadow).

The leaf is composed of several pairs of leaflets and a terminal one. Those of the radical leaves are sparsely notched; those of the leaves emerging from the stems are lance-shaped and have smooth margins.

The lovely lilac or white flowers are grouped in fairly dense terminal inflorescences. Each flower is typical of the family, so its fundamental structure is similar to that of the wallflower (p. 182).

Like most members of the family, the plant is edible; indeed in some parts of the world it is eaten as a salad.

The plant is called the cuckoo flower because it begins blooming when the cuckoo first arrives in Great Britain. The name lady's smock was originally our lady's smock since the pale lilac flowers in the field resembled a smock laid out to dry.



Ernest G. Neal

CUCKOO FLOWER

THE FLORAL YEAR

At first but single,
And then in flocks,
In dell and dingle,
The Lady-Smocks
Make mist for the golden cowslip tapers,
To shine like a sunrise through morning vapours.

A Spring Carol : ALFRED AUSTIN

Close relatives of the cuckoo flower or meadow bitter-cress (indeed members of the same genus, *Cardamine*) are the two bitter-crests, the hairy and the large-flowered; and they both begin blooming at the same time and in similar habitats, namely moist meadows, though the large-flowered bitter-cress also grows along river-banks. This species blooms until June, but the hairy bitter-cress continues into August.

The hairy bitter-cress is *C. hirsuta* (from the Latin for hairy), and the large-flowered bitter-cress is *C. amara* (from the Latin for bitter). The hairy is an annual, growing four to twelve inches high; the large-flowered (a more robust perennial) is about the same size as the cuckoo flower. In habit, both resemble the cuckoo flower. The flowers of both are white, those of the large-flowered bitter-cress being somewhat smaller than those of the cuckoo flower and those of the hairy bitter-cress being much smaller.

The ragged robin, a close relative of the red campion (p. 223), is now presenting its pink blossoms and will continue to do so until midsummer. This member of the CARYOPHYLLACEAE, Dicot. (p. 99), grows in bogs and other damp places — a fairly sturdy perennial herb attaining a height of one to two feet.

Ragged robin belongs to the genus *Lychnis* which also comprises such well-known plants as red campion, white campion and corn cockle. Ragged robin is *L. flos-cuculi*. The generic name is derived from the Greek *lychnos*, a lamp, for the flowers of most species look like flames. The specific name is interesting for it relates this plant chronologically to the cuckoo flower (p. 185), since it is derived from the Latin *flos*, a flower, and *cuculus*, a cuckoo — indicating the season when the flower first appears.

The general habit of the plant, especially in its branching, is characteristic of the family (p. 157). The leaves are lanceolate, and so less broad than those of the red campion (p. 223).

The large flowers of the ragged robin cannot be mistaken for any other species, for each of the five rose-pink petals is divided into four linear segments, giving the entire plant a ragged appearance.

Let never maiden think, however fair,
She is not fairer in new clothes than old.
And should some great court-lady say, the Prince
Hath pick'd a ragged-robin from the hedge,
And like a madman brought her to the court,
Then were ye shamed, and, worse, might shame the Prince
To whom we are beholden.

Marriage of Geraint : TENNYSON

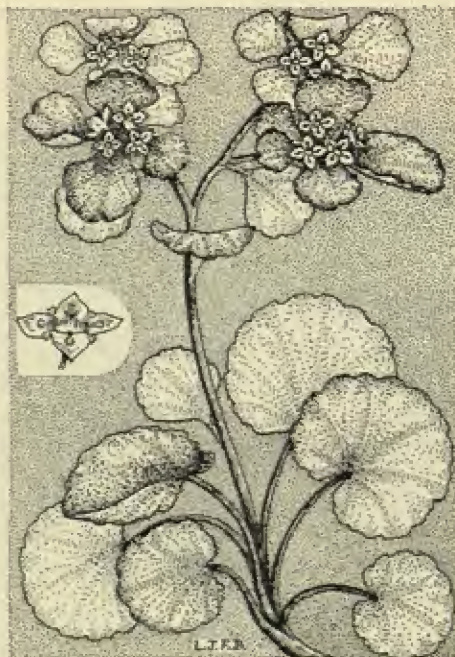
There are five greenish-red sepals united to form a tube with five pronounced teeth and ten ribs. Each petal is free and bears small scales at the base of its broader part (that is at the top of the corolla throat). Both red and white campions are unisexual; but the ragged robin is hermaphrodite, because each flower has ten stamens and five carpels, the latter fused to form a single-chambered ovary surmounted by five free, very conspicuous styles.

In wet places, the two golden saxifrages — the common or opposite-leaved and the alternate-leaved — are now launching on their short flowering season (April to May). Both are small perennials growing two to four inches high.

Though they are members of the same family (SAXIFRAGACEAE, Dicot.) as the rue-leaved (p. 183) and the meadow (p. 238) saxifrages, they differ sufficiently to warrant a separate genus — *Chrysosplenium*. This name is derived from the Greek *chrysos*, gold, in reference to the greenish-gold flowers, and *splen*, spleen, since the plants were at one time used for treating ailments of the spleen. The two species are *C. oppositifolium* and *C. alternifolium*, the specific (and common) names indicating the differences between these two closely related species so far as method of leaf insertion is concerned. The radical leaves of the alternate-leaved species have long stalks; those of the opposite-leaved species have short stalks. There can be no mistaking these two plants, for the succulent leaves are kidney-shaped with rounded divisions to their margins and their stalks join the blades near the centre.

The flowers are small and grouped in terminal inflorescences. There are no petals, but four (or sometimes five) greenish-gold sepals united at their bases only; eight (or sometimes ten) stamens; two carpels fused at their bases but diverging towards the top. The fruit is a two-beaked capsule.

The water starwort, sometimes known as vernal water starwort, is more truly aquatic in habitat than the plants so far described in



ALTERNATE-LEAVED GOLDEN
SAXIFRAGE

Left, flower enlarged

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this chapter. It is now blooming in ditches, ponds and slow streams, and will continue to do so until September. But this will not cause much excitement, for the flowers are so insignificant as to demand very close examination if their presence is to be detected at all.

The water starwort belongs to the family CALLITRICHACEAE, a family so closely related to another family of aquatics, namely, HALORRHAGACEAE (which contains the mare's tail, p. 397, and the water milfoil, p. 398), that some botanists place both families together under the name of the latter.

There are several species of water starwort, all of which are of floating habit, but the most common is *Callitriche verna*, which may be annual or perennial. The entire plant is insignificant. Its submerged leaves are long and narrow; the aerial leaves are lance-shaped and borne in opposite pairs; at the top of each stem above water there is a small rosette of leaves, and in many cases this is discovered floating on the surface of the water. The generic name is derived from the Greek *kalos*, beautiful, and *thrix* (*trichos*), a hair,—referring to the finely divided leaves. The common name indicates the stellate arrangement of the floating leaves at the tips of the branches.

The flowers are unisexual, very simple and very insignificant. They are borne in the axils of the terminal leaves. The male is reduced to a bract subtending one stamen (in some species there are two); the female, to two carpels fused to form a four-chambered ovary having two styles.

COASTAL AREAS

On muddy seashores (and also in some mountainous areas, especially in Scotland) thrift or sea pink will now be blooming, and it should not be difficult to find it in those areas, for it is fairly common and quite conspicuous. It is sometimes known as the sea gilliflower. It will continue to bloom until September.

Thrift belongs to the small cosmopolitan family PLUMBAGINACEAE, of which it and the sea lavender (p. 527) are the only common British members. It is a member of the genus *Armeria* (from the Celtic *ar*, near, and *mor*, the sea). Its specific designation is *S. maritima*. It is a perennial growing two to twelve inches high. Owing to its compact habit and attractive flowers it is prized as a border and rock plant in gardens. The cultivated varieties may be any shade from rose pink to deep red.

The wild species is a compact plant with a strong root-stock and a tuft of radical, grass-like leaves. During the fall, the root-stock dies away but leaves an axillary branch resting in the soil ready to carry on the next season's growth.

The rose-coloured flowers are borne in compact inflorescences at the ends of comparatively long stalks. Each inflorescence is surrounded by an involucre of pinkish-brown bracts. This floral arrangement inspired the old English name of lady's pincushions. Each flower is composed of five sepals united to form a five-cleft tube; five petals forming a funnel

APRIL

opening out into a five-lobed salver; five stamens; and five carpels fused to form a single-chambered ovary surmounted by five styles. The fruit is a small nut containing one seed.

Old April wanes, and her last dewy morn
Her death-bed steeps in tears; — to hail the May.
New blooming blossoms 'neath the sun are born
And all poor April's charms are swept away.
The early primrose, peeping once so gay,
Is now choked up with many a mounting weed,
And the poor violet we once admired
Creeps in the grass unsought for; flowers succeed,
Gaudy and new, and more to be desired,
And of the old the schoolboy seemeth tired. J. CLARE

OTHER FLOWERS WHICH MAY APPEAR IN MARSHES, RIVER BANKS OR COASTAL AREAS DURING APRIL

(The number following each flower is the page on which it is mentioned or described)

Ash, 146	Willow, Bedford, 151
Aspen, 142	Willow, Crack, 151
Butterbur, 140	Willow, Cricket-bat, 151
Kingcup, 138	Willow, French, 151
Marigold, Marsh, 138	Willow, Huntingdon, 150
Poplar, Grey, 140	Willow, Osier (Osier beds), 151
Poplar, White, 140	Willow, Rose, 151
Willow, Almond-leaved, 151	Willow, White, 151



Ernest G. Neal

PART VI

MAY

May had painted with his softë showers
This garden full of leavës and flowers :
And craft of mansië's hand so curiously
Arrayèd had this garden truëly,
That never was there garden of such price,
But if it were the very Paradise.
The odour of flowers and the freshë sight,
Would have maked any heartë light
That e'er was born, but if two great sicknéss
Or two great sorrow held it in distress ;
So full it was of beauty with pleasáncë.

CHAUCER

THE month of May ushers in the summer. Though we are entitled to expect temperate weather, not too hot and not too cold, it must be realised that May can be very treacherous. But in general, now is the time that nearly all life around us seems to take on a fresh lease of activity, and blossoms abound everywhere. It should be no cause for wonder therefore that so many festivals and ceremonial rites have been held to celebrate the coming of May.

May is the fifth month of our year, but the third of the old Roman calendar. Its name was probably given in honour of the goddess *Maia*, the cult-partner of *Volcanus* (not to be confused with *Maia*, the eldest of the *Pleiades*). The Romans celebrated May Day, and from that time up to the present day general and local celebrations have been held on this all-important day.

In the England of medieval and Tudor times all classes of people went out into the country at dawn to go 'a-maying' and then returned in procession 'bringing in the may'; a large may-pole bedecked with ribbons, leaves and flowers having place of honour. Though in most parts the actual pole was made of birch and was erected for the one day only while dancing and revelry held sway, in larger towns, especially London, the pole was made of more durable wood because it was to be erected presumably for all time. Thus it remained, not permanently, but for some time, and on occasions gave its name to the street or alley. One of them, 134 feet high, erected by twelve sailors in the Strand, London, in 1661, gave its name to May-pole Alley. But the Puritans and others strongly disapproved of the may-pole, so it was in due course forbidden by law; but during the Restoration it again returned to favour.

Other ceremonies connecting the month of May with the hawthorn or may are considered in *Trees in Britain*, pp. 179-80. Then there are further traditional customs, but most of them have died or are dying out. For example, the crowning of the May Queen is a thing of the past except in certain remote parts. In some districts of the West of England country-folk are up at dawn on May Day to bathe their faces in the dew on the grass. From the roof of the handsome tower of Magdalen College, Oxford, the choir still sings at sunrise on May morning.

At a meeting of the International Socialist Congress held in 1889, May Day was selected as Labour Day and proclaimed a holiday; but the latter is not generally recognised in the United States and Great Britain. Some writers have attempted to connect Labour Day with certain of the May Day festivals; but it is doubtful if there is any connexion at all.

20

TREES

Lord, heal me now with a vision of green things growing—
With the many shades of trees in a woodland way,
With delicate boughs that wave like waters flowing,
With the springing grass and the mounting corn and the may.

Prayer in May: V. H. FRIEDLAENDER

THE month of May is so closely connected with the may tree or hawthorn that we can do no better than begin by examining this plant, for it, like many other trees, is now blooming and will continue to do so until well into June.

The term 'hawthorn' is probably derived from the Anglo-Saxon *haguthorn*, hedge-thorn, for this plant is so often used for making hedges. The derivation of the name 'may' is obvious. The plant belongs to the family ROSACEAE, Dicot. (p. 302), and it is included in the genus *Crataegus*—a north temperate genus made up of an uncertain number of species (possibly about a hundred). The generic name is derived from the Greek *krataigos*, a flowering thorn.

There are two species. *C. monogyna* is the common hedge bush. In certain parts it is known as quick. Apart from its more bushy and less arboreal habit, it differs from the other species, *C. oxyacanthoides* (a tree usually confined to open woods), in having one style only (whereas *oxyacanthoides* has two and sometimes three), larger flowers, less-thorny

THE FLORAL YEAR

branches and less-indent ed leaves. *Oxyacanthoides* is derived from the Greek *oxys*: *akantha*, a thorn.

The general habit of the two hawthorns is described on p. 74. The simple leaf is deeply indented. The flowers are borne in dense clusters which, when in full bloom, cloud the tree or bush with white.

The May-tree on the hill
Stands in the night
So fragrant and so still
So dusky white,

That, stealing from the wood
In that sweet air,
You'd think Diana stood
Before you there.

The May-tree: ALFRED NOYES

The hawthorn flower is typically rosaceous, having five small green sepals, five white petals, many stamens and one or two (sometimes three) styles according to species (see p. 191). The fruit, sometimes called a haw, is described on p. 575. *Crataegus* is the progenitor of many cultivated ornamental trees and shrubs, with white, pink or red, single or double flowers. The fruits may be yellow, red or purple.

A number of other rosaceous trees are also in bloom at this time of year. The genus *Prunus* is represented by the three cherries, namely, gean (*P. avium*), the bird cherry (*P. padus*) and the wild or dwarf cherry



MAY OR HAWTHORN

F. A. Girling

(*P. cerasus*). All three species grow in woods and hedges, though the gean frequents the former mostly. They all bloom during May and June.

The general form of these trees is described on p. 71.

It is possible that all three forms of cherry trees are natives of Britain, though we are not certain of this.¹

The leaves begin to break bud early in May, at the time that the flowers are blooming. By July, they have reached maturity. All three species have similar leaves (except that gean leaves are slightly hairy on their under-surfaces). Each leaf is long and oval with serrated margins and pointed tips.

The flowers of the bird cherry are borne in loose racemes; those of gean and wild cherry in closer umbels. If the tree blooms at all during the year, it does so in such profusion as to produce a very striking effect.

Shining white clouds in the cherry trees tangled,
And over the orchard snowing;
Silver wild cherries on the hill-side strangled,
And bright among bronze oaks blowing:
So white, so bright, so fragrantly
Heart's delight blossoms in me.

Elizabeth's Song: LASCELLES ABERCROMBIE

The flower is typical of the genus *Prunus* (p. 122), though in the cherry the receptacle enclosing the single carpel is more vase-shaped and less open than those of plum and blackthorn. The petals of gean are heart-shaped; those of the wild cherry are nearly oval; and those of bird cherry have slightly notched margins.

The fruits are typical drupes, but they do not ripen until July (though cultivated cherries are usually ready by June) (p. 415).

The progenitor of all apples — the wild apple or crab-apple, another member of the rose family, is now also blooming. It grows in woods and hedges. But its flowering season is short and usually over by the end of May. The apple has been separated from the genus *Pyrus* (to which it used to belong), and is now placed in a newly formed genus, *Malus* (*M. pumila*); the generic name is, in fact, Latin for an apple tree.

The general habit of the tree is described on p. 72. At the present time the leaves are beginning to emerge; they are oval, having serrated edges. The flowers are borne in clusters on short stalks. They are white, tinted with pink (*Plate 5*).

The apple blossoms' shower of pearl
Though blent with rosier hue,
As beautiful as woman's blush,
As evanescent too.

Apple Blossoms: LETITIA E. LONDON

¹ The origin of cherries is discussed in *Trees in Britain*, by L. J. F. Brimble, pp. 161-2.



Ernest G. Neal

CRAB-APPLE BLOSSOM

in hedges mainly in the south of England. It is still retained in the genus *Pyrus* (Latin for pear), but, in spite of its specific name *communis*, it is by no means common.

The general habit of the wild pear tree is described on p. 73, and the fruit on p. 34. At this time of the year the flowers and leaves are the main feature. Both are similar to those of the apple, though the former are pure white and the latter more elliptical.

The genus *Sorbus* (from the Latin *sorbeo*, to swallow), also of the family ROSACEAE, Dicot., is represented by four species now in bloom, and they all continue blooming into June. They are: white beam, wild service, rowan and true service. The habit of the trees is described on p. 73, and the fruits on pp. 570.

The white beam (*Sorbus aria*) derives its specific name from the Persian province from which the plant originated. It grows in woods on calcareous soil. It should be here pointed out that the term 'beam' is the Saxon derivative of the word 'tree', so it is incorrect to refer to a 'white beam tree'.

The leaves are now emerging. When fully expanded they are broadly elliptical, and though they are serrated the notches are uneven, being few at the stalk end of the blade and many at the distal end.

The flower is again typical of the rose family, though its gynoeceum is different from others in the family.

Already fallen plum-bloom stars
the green,
And apple-boughs as knarred as
old toad's backs
Wear their small roses ere a rose
is seen.

The Poor Man's Pig:
EDMUND BLUNDEN

There are five hairy, boat-shaped sepals, five free, heart-shaped petals, numerous stamens and an ovary formed of five fused carpels embedded in the base of a slightly hollow receptacle. Five styles emerge from the top of the ovary. The fruit is a typical pome, described on p. 34.

The wild pear also blooms during May and June. It grows

The small white flowers are borne in dense cymes. They are typical of the genus *Pyrus* to which all members of the genus once belonged. The fruit of the white beam, called in some parts chess-apples, are described on p. 570.

There are two other species of white beam, though both are rare. One is the Cornish white beam (*S. latifolia*) whose broad leaves are lobed. Then there is the Scots white beam (*S. intermedia*), confined to the mountains of Scotland and Wales, but also cultivated elsewhere. Its leaves are even broader and more deeply lobed.

The wild service (*S. torminalis*) is closely related to the white beam, though its leaves are much more deeply lobed; hence the misleading alternative name of maple tree. The flowers are larger and the fruits smaller than those of white beam. The fruits (p. 570) are palatable only when they are beginning to decay after subjection to frost. At one time they were used as a cure for colic — as indicated in the specific name which is derived from the Latin *tormina*, colic. The wild service grows in woods but is not common in Britain.

The lovely rowan or mountain ash of woods and open spaces is so popular as a decorative tree that it must be no cause for wonder that it has had many local names bestowed on it, such as white ash, witchwood, fowler's service, cock drunks (because the fruits were supposed to render fowls intoxicated), witchen, wicken, wiggins, etc. The botanical name of this tree is *Sorbus aucuparia*. The specific name is explained on p. 571.

During May and June the dense cymes of cream-coloured flowers are at their best, and the beautiful leaves have emerged to give



Eric J. Hooking

WHITE BEAM



FOLIAGE OF WILD SERVICE

a green background to them. Each leaf is compound, being made up of a long stalk bearing five to eight pairs of lateral and one terminal lance-shaped, serrated leaflets. The upper surface is bright green; the lower pale. Each flower is similar to, though smaller than, that of the hawthorn.

The true service (*S. domestica*) is very rare in Britain. It was at times known as sorb, also as the chequer tree. The leaf is like that of the rowan though the leaflets are broader and hairy. The white flowers are slightly larger.

Though we have completed the survey of rosaceous trees which bloom during May, this does not exhaust the trees which present conspicuous blooms during this month — an important point, for most British trees have very inconspicuous flowers.

The handsome horse-chestnut is now beginning to present its flowers and will continue to bloom throughout the month and the first part of June (*Plate 5*).

This tree, which demands plenty of light, grows in open fields and parks. It does not flourish in woods. It belongs to the family SAPINDACEAE, Dicot. — a family of trees, shrubs and lianes distributed mainly in the tropics. It is a member of the genus *Aesculus* which also includes the well-known American buckeyes often cultivated in Britain. The name is derived from the Latin *esca*, food; but the fruits of this chestnut are not palatable, not even to many animals. The horse-chestnut is *A. hippocastanum*.

The habit of this robust tree is described on p. 63; its fruit, the well-known 'conkers', on p. 566; but at this time of the year the tree is bearing exceptionally striking leaves and flowers. It is not possible to discuss all the points of interest of this important tree here; further details are given in *Trees in Britain*, pp. 303-9. The leaves are very characteristic of this plant and others in the same genus. Each one is very large and compound, being composed of five or seven palmately arranged leaflets. Each leaflet is long, broadening towards the tip and then more suddenly tapering to a pointed apex. The margins are serrated.

The flowers are large and are borne on erect inflorescences which are at their best in late May. Then they give the impression that the entire tree is covered with hundreds of candles which explains why the horse-chestnut is sometimes called the candle tree. The inflorescence is a complicated raceme, the lowest flowers being borne on longer stalks than the uppermost. The latter are usually male only, for their ovaries are sterile. Each flower has five joined sepals and four or five petals of unequal size. Each petal is white with yellow patches later turning pink; these patches act as honey-guides to insect visitors. There are about seven long, conspicuous stamens and a three-chambered ovary having a long style.

The red horse-chestnut (*A. carnea*) is not so robust as the white. Its origin is doubtful.

The maples are now blooming, though it is not easy to recognise this, for the flowers are inconspicuous. Maples belong to the important family ACERACEAE, Dicot. — a family of trees spread over north temperate regions in both Old and New Worlds and also the mountainous regions of the tropics. The maples belong to the genus *Acer* — the Latin name for these trees; probably having been applied from the adjective *acer*, keen, for the wood is hard.

Three species are to be found growing wild in Britain, namely: the field maple (*Acer campestre*), sometimes known as the common, English or small-leaved maple; the great maple (*A. pseudoplatanus*), usually called sycamore, a name which has caused much confusion — and sometimes the large-leaved maple; and the Norway maple (*A. platanoides*). The general habit of these trees was described on p. 64.

The field maple (*A. campestre*) occurs more often as a hedge shrub than as a tree. The leaves are beginning to mature during May. Now they are light green, but later they will darken and might even become



Harold Briston

MAPLE LEAVES

Top left, great maple; bottom left, field maple; bottom right, box-elder; top right, Norway maple

tinged with purple. They vary in size, those of trees being usually larger than those on plants of more bushy habit. They are borne in pairs, each pair being at right angles to the next. Each leaf has a long thin stalk bearing a five-lobed blade, and each lobe has one or two deep notches.

The flowers are insignificant, being borne in erect racemes. They usually appear on trees only, during May and June; those field maples which make up hedges seldom bloom. Some flowers are hermaphrodite, and others male only. Each greenish-yellow hermaphrodite flower is composed of five small sepals, five narrow petals, eight stamens and two carpels fused to form an ovary bearing a long style tipped by a two-lobed stigma. In the male flower there are no carpels and the stalks of the stamens are longer. After fertilisation the fruit develops into the familiar double samara (pp. 30, 568).

The handsome great maple or sycamore (*A. pseudoplatanus*) is altogether larger than the field maple. Its leaves are larger, and each is divided into five lobes which are unevenly notched. The flowers, unlike those of the field maple, are borne in large, pendulous racemes (*Plate 5*). The fruits, too, are larger. The tree grows in woods, hedgerows and more open spaces.

In Scotland the great maple was at one time called 'plane', for indeed its leaves resemble those of the plane (though not so much as those of the Norway maple), and its bark scales off. Even now the tree is sometimes called the false plane, a name still signified in the specific name.

The Norway maple (*A. platanoides*) was introduced into Britain from northern Europe in 1683. It is not so large as the great maple. The leaf is its most diagnostic feature for the five lobes have long, pointed teeth — very like those of the plane, hence the specific name.

The hornbeam (p. 75) is also in flower now and will continue to bloom into June. This tree, which is not so common as it used to be, grows in woods, though it is occasionally used for hedge-making.

The hornbeam, known also in some parts as the yoke-elm, belongs to the north temperate family CORYLACEAE to which the hazel also belongs. The former is a member of the genus *Carpinus* (*C. betulus*). There is some doubt about the origin of the common name 'hornbeam'; the most probable suggestion being that its wood was used for the yokes worn by bullocks and attached to their horns. This also explains the alternative common name. The generic name *Carpinus* is derived from the Celtic *car*, wood, and *pinos*, head, the wood used for the making of yokes. The specific name comes from the Latin *betula*, birch (p. 117), for in certain respects the two trees are similar.

The leaves are arranged alternately. Each has a short stalk and an elliptical, pointed and serrated blade one to three inches long. In France the foliage is used for feeding cattle; in Britain small wild mammals relish it.

The flowers are unisexual and are borne in male and female catkins,

both sexes on the same tree. The male catkins are one to two inches long. Each catkin bears many bracts; each bract subtends three to twelve stamens whose anther-heads are deeply cleft. The bracts of the female catkins are smaller. Each subtends two flowers. At the base of the flower is a bracteole which figures more prominently in the fruit (p. 568) The flower is very simple, being composed of a two-chambered ovary bearing two styles. It is pollinated through the agency of wind.

The two less common birches are much later in blooming than the silver birch (*Betula alba*) which bore its catkins during March (p. 117). The more northerly birch (*B. pubescens*) which frequents woods is now bearing its catkins. The differences between this species and the common one, apart from difference in time of flowering are: the winter twigs of *pubescens* are downy (the specific name is from the Latin *pubes*, hair, and *gero*, to bear), and the branches are less pendulous. Hybrids between *alba* and *pubescens* are also known.

The dwarf birch (*B. nana* — from the Latin *nanus*, a dwarf) grows in bogs in Scotland. It also blooms during May and June. It occurs still further north than *B. pubescens*; in fact it flourishes even in Greenland, so it is considered to be a remnant of the Ice Age in Scotland, where it grows in bogs. It is not a tree, but a mere shrub growing about three feet high and of creeping habit. Its leaves are rounder and they have shorter stems.

Most of the willows have already bloomed (p. 151), but the bay-leaved willow is late, presenting its catkins during May and June. It is also known as the sweet bay willow (*Salix pentandra*). It is about twenty feet high and frequents river banks and is often pollarded to produce long, thin branches for wicker-work. Its bark peels off in patches. The under-surfaces of the lance-shaped leaves are covered with a pale-green bloom, and emit a bay-like fragrance. The male flower has five or even more stamens.

Holly, an inhabitant of woods and hedgerows, is always conspicuous because its dark, glossy, evergreen leaves bestow on the entire plant a shade which contrasts strongly with the green shades of other plants in the neighbourhood. When it is in full



HOLLY IN BLOOM

THE FLORAL YEAR

fruit (that is, if it is fruiting at all), then it is even more conspicuous. But the flowers which appear over a long season (May to August) add little to the beauty or colour of the plant, for they are small and drab.

Holly is a member of the family *AQUIFOLIACEAE*, *Dicot.*, a small family of temperate and tropical shrubs and trees, most of which are evergreen. The most important genus in the family is *Ilex*, and this is distributed over Europe, Asia, Africa, Australasia and Central and South America. Holly belongs to this genus (*I. aquifolium*). *Ilex* is Latin for the evergreen oak (p. 144) — the holly bears some resemblance to this oak; the specific name of holly is derived from the Latin *acutus* : *folium* — a derivative which explains itself. The common name 'holly' is from the Anglo-Saxon *holegn*. In some localities the plant is called holm or hulver, the former name being a corruption of the Old English *holen* meaning holly.

Holly grows very slowly, but, given the opportunity, it will attain a height of forty to sixty feet.

The leaves are too familiar to warrant detailed description. The tough nature of the leaf renders it suitable for withstanding the rigours of winter. The spines certainly act as an efficient protection against browsing animals; but there is doubt about the suggestion that this explains why the lower leaves (within reach of animals) are spiny,



N. K. Gould

A HOLLY HEDGE

In the garden of Preston Hall, Midlothian

whereas the upper ones (out of reach of animals) are sometimes smooth, for the statement is not always true—some holly trees bear nothing but spiny leaves, others bear nothing but smooth leaves, and sometimes one finds smooth leaves near the bottom of the tree and spiny leaves further up.

Below a circling fence its leaves are
seen
Wrinkled and keen;
No grazing cattle through their
prickly round
Can reach to wound;
But as they grow where nothing is
to fear,
Smooth and unarm'd the pointless
leaves appear.

The Holly Tree: SOUTHEY

There are many varieties of holly under cultivation—large-leaved, small-leaved, variegated, golden and weeping.

The flowers may be unisexual or hermaphrodite. Sometimes in an apparently hermaphrodite flower the stamens are sterile, so that flower is therefore female. The inflorescence takes the form of a small irregular bunch borne in the axil of a leaf. In the hermaphrodite flower there are four small united sepals, four small white petals joined at their bases only, four stamens and four to six carpels fused to form an ovary with the corresponding number of chambers. There are no styles, so the stigmas are joined directly on to the top of the ovary. The fruit is a fleshy drupe containing one to six seeds (p. 596).

Holly timber is not used much these days, though birdlime is made from the bark. The plant is, however, very tolerant of clipping, so it makes excellent hedges.¹

The holly has played an important part in certain ceremonies and festivals, especially that of Christmas (p. 596).

The spindle tree blooms in hedgerows during May and June. It is a member of the family CELASTRACEAE, a small family of temperate and tropical plants. The spindle tree belongs to the genus *Euonymus* (*E. europaeus*)—from *Euonymē*, mother of the Furies. The flowering of this



SPINDLE IN BLOOM

Bottom left, hermaphrodite flower

¹ *Trees in Britain*, by L. J. F. Brimble, p. 296.

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plant was supposed to foretell the plague. It is known by other more local names such as dogwood (not to be confused with the true dogwood, p. 280), pegwood, prickwood and skewerwood — names which referred to certain uses to which the wood of the plant was put, as explained on p. 78.

The leaves are simple, long and lance-shaped with serrated edges. They give a beautiful display of tints during autumn (p. 585). Leaves, bark, flowers and fruit all contain a poisonous acid.

The insignificant flowers are borne in loose clusters in the leaf-axils. They may be hermaphrodite or unisexual. The hermaphrodite flower usually has four sepals, four greenish-white petals, four stamens and a four-chambered ovary. On occasions one comes across a flower where the number of floral parts is six. The fruits which appear during October and November are strikingly beautiful (p. 574).

Since this plant, which usually adopts the habit of a shrub rather than a tree, presents so many different shades in autumn foliage and fruit, it is a favourite for cultivation and there is a number of handsome varieties.

The wayfaring tree, sometimes also known as the marsh guelder rose (though it must not be confused with the true guelder rose, a member of the same family), grows in hedgerows and open woods, especially on dry calcareous soils, and it blooms during May and June. It belongs to the elder family, CAPRIFOLIACEAE, Dicot., a family composed mainly of trees and shrubs distributed throughout the world, though mainly in north temperate countries (p. 163).

The wayfaring tree is a member of the genus *Viburnum*, a large and important genus better represented in North America and Asia. Wayfaring tree is *Viburnum lantana*. The generic name is Latin for wayfaring tree and the specific name indicates woolly. The common name is intriguing, but its origin is unknown. The Rev. C. A. Johns suggested it had been inspired by the appearance of the leaves which always seem powdered with dust from the road.

The general habit of the wayfaring tree is described on p. 79. The comparatively large, oval and pointed leaves have evenly serrated margins and downy under-surfaces. Like the elder, the small yellowish-white flowers are borne in large clusters, taking the form of irregular disks. The inflorescence is built up with five main branches each of which gives off branches of unequal length so that all the flowers are brought up to the same level. Each flower has five united sepals, five petals which are fused at their bases but then spread out to form a salver, five stamens alternating with these and three carpels united to form an ovary having three stigmas inserted directly on its upper surface, for there are no styles. The fruit, a berry, is described on p. 574.

The two comparatively rare buckthorns begin blooming in May. They are members of the family RHAMNACEAE, a fairly large and widely

distributed family of trees and climbers. They are included in the genus *Rhamnus* (from the Greek *rhamnos*, a thorny shrub). The alder buckthorn (*R. frangula*), known locally as berry-bearing alder and black alder (not to be confused with the true alder, p. 77), grows on peaty heaths and in woods. It has a long flowering season (May to September); the purging or cathartic buckthorn (*R. catharticus*) grows in hedges on limy soils, and blooms during May to July. The general habit of these plants is described on p. 79.

The specific name of the alder buckthorn (*R. frangula*) is from the Latin, *frango*, to break, for its wood is brittle. The alternately arranged leaves are lance-shaped but broad at their bases. Their margins are smooth. The flowers are borne in small clusters in the axils of the leaves. Each flower has five sepals, five petals, five stamens and an ovary formed from five carpels and bearing five styles. The fruit is described on p. 574.

The leaves of the purging buckthorn are clustered at the ends of small branches. Each has slightly serrated margins. There are also other branches modified into thorns. The flowers of this species are unisexual and the two sexes are borne on different plants. The parts of the flower are in fours. The fruit is described on p. 574; its properties inspired the specific name.

The even rarer sea buckthorn is also blooming now, and will continue to do so throughout this and next months. But it belongs to a different family, namely, ELAEAGNACEAE, Dicot., which, however, is very closely related to RHAMNACEAE. ELAEAGNACEAE is a small family of shrubs which frequent steppes and coastal areas, and most of them have leathery leaves. Sea buckthorn is *Hippophae rhamnoides*, the generic name being derived from the Greek *hippophaes*, sand or sea-thorn (though some derive it from *hippos*, a horse, and *phaos*, light, since the plant was considered to produce an effective cure for diseases of the eye in horses).

The sea buckthorn is to be found, but rarely, in coastal areas. It is a small shrub growing anything from one to eight feet high. The flowers appear before the leaves. The former are unisexual; the latter long and lanceolate. The fruit is yellow.

OTHER TREES WHICH MAY BE BLOOMING DURING MAY

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21

WOODS AND THICKETS

Nunc frondent sylvae, nunc formosissimus annus.

Eclogues, No. 3 : VERGIL

In such green palaces the first kings reign'd,
Slept in their shades, and angels entertain'd ;
With such old counsellors they did advise,
And, by frequenting sacred groves, grew wise.

On St. James' Park : EDMUND WALKER

Whoso walketh in solitude
And inhabiteth the wood,
Choosing light, wave, rock and bird
Before the money-loving herd,
Into that forester shall pass
From these companions, power and grace

Woodnotes : EMERSON

THE new warmth of the year is now penetrating the woods, stimulating many plants to bloom for the first time.

Now, if we ignore those families which comprise the rushes, sedges and grasses (all members of which have insignificant flowers), it must be admitted that the group of Monocotyledons, much smaller though it be than the Dicotyledons, excels in percentage of plants whose flowers are especially arresting by virtue of their shape, size, colour or perfume. The woods and thickets of May give some of these more beautiful Monocotyledons a chance to present themselves ; though at the very beginning of the season the group introduced itself with crocuses and snowdrops.

There surely can be very few in Britain who have not had the good fortune at one time or another of seeing the misty carpet of bluebells gradually appear in some wood or thicket. The carpet gets bluer and bluer as May gets older, is at its best during early June, then gives way to an untidy greenness as flowers fade and the fruits develop.

MAY

Tonight from depths of loneliness I wake in wistful wonder
To a sudden sense of brightness, an immanence of blue —
O are there bluebells swaying in the shadowy coppice yonder,
Shriven with the dawning and the dew?

Bluebells: LUCIA C. MARKHAM

Sometimes bluebells escape into the surrounding meadows, but then they are smaller and sturdier, and so less graceful.

Scottish readers must not be confused over this flower, for it is not the 'bluebell of Scotland' of their songs and legends; that is the harebell (p. 484). Even in England the bluebell was at one time called the harebell. Neither should the bluebell be called the wild hyacinth (which it frequently is), for the cultivated hyacinth, though a member of the same family, belongs to a different genus; it did not descend from the wild bluebell. The bluebell bulb is not used as an article of diet these days, though at one time it was dried and powdered and used as a substitute for starch, though it contains inulin, not starch. Medicinal virtues have also been claimed for this powder; and the juice of the fresh stems were looked upon as an effective antidote for snake-bite, though this is doubtful.

The bluebell is the commonest British representative of the lily family (LILIACEAE, Monocot.), and a very typical representative it is. At one time it was known as *Hyacinthus nonscriptus*, but this name has now been discarded in favour of *Scilla nutans*. The genus *Scilla* is a fairly large one, though the bluebell is the only common indigenous British member. The generic name is Greek for sea leek (the Latin is *squilla*, squill), and the specific name is Latin for nodding — an implication which is obvious.

The bluebell is a perennial achieving a height of about six inches in open pastures to about eighteen inches in woods. It perennates by means of a bulb (p. 16). The bulb produces new bulbs in the axils of its fleshy leaves; and thus the plant spreads. But seeds are also produced, though it takes three years for a bulb which will in that same season bear



Harold Bastin

BLUEBELLS

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a flowering shoot to develop from a germinated seed.

The leaves are long and linear, pointed at their tips and having parallel veins (*Plate 6*).

The beautiful blue pendulous flowers are borne in one-sided racemes (six to twelve flowers to each raceme), the oldest flowers at the base. Each flower is borne on a short stalk inserted in the axil formed by the axis of the inflorescence and a greenish-blue bract. All floral organs are in multiples of three. The perianth is a bell made up of six fused segments which separate into pronounced recurved lobes at the open end. There are six stamens, one each attached to the inside of the perianth segments, three about half-way up the bell and three, alternating with these, at the base. The three carpels are fused to form a three-chambered ovary having a long style surmounted by a flat stigma. After fertilisation, the floral stalk and receptacle curve upwards so that the fruit — a large green capsule — is more or less vertical.

Most of us know the lovely lily-of-the-valley, but usually only as a flower nestling under its canopies of green leaves in some shaded spot in the cultivated garden or as bunches of white racemes borne on sickly, pale-green stems and sold (usually at prohibitive prices) in our towns. Yet this shy flower of exquisite scent is a native of Britain and occurs in certain woods where it is assured of plenty of shade.

The lily-of-the-valley is another member of the lily family (LILIACEAE, Monocot.), and it belongs to the genus *Convallaria* (*C. majalis*) — the only representative of the genus anywhere. The generic name indicates the habitat of the plant, for it is derived from the Latin *convallis*, a valley; the specific name is from the Greek *maia*, for the plant blooms in May (and sometimes even in June). In earlier times the plant was known as ladders-to-heaven.

The plant has a particularly thick underground stem covered in scales, and it is a perennial, for each branch of this underground stem produces a few scales and two new foliage leaves each year. The beautiful broad, lance-shaped leaves are of a delicate green shade and wavy of margin. They form an effective protection for the shade-loving racemes of small white flowers.

And the Naiad-like lily of the vale,
Whom youth makes so fair and passion so pale,
That the light of its tremulous bells is seen,
Through their pavilions of tender green.

The Sensitive Plant: SHELLEY

There are six to twelve flowers to each raceme, and they are borne in a one-sided arrangement like those of the bluebell. The perianth of the flower is more globular than that of the bluebell, but the six free tips are recurved. Apart from this, the flowers of lily-of-the-valley and bluebell

are fundamentally similar. Since the flowers are so well hidden by their foliage they might well be missed by insects in spite of their seductive perfume, so it is just as well that self-pollination is possible and effective. The fruit is quite different from that of the bluebell, for it is a spherical red berry.

The plant has figured in old herbals; a decoction of the flowers was supposed to be good for treatment of gout and heart trouble.

The commonest of the garlics — the broad-leaved garlic or ramsons — grows in woods and other damp shady places and presents its attractive white flowers during May to July. Sometimes specimens in flower may be discovered in April.

Though most Floras include the genus to which garlic belongs in the family LILIACEAE, Monocot., it appears to have closer affinities with members of the family AMARYLLIDACEAE, Monocot., to which daffodils and snowdrops belong (p. 110), so garlics are included in that family here. Garlic is a member of the genus *Allium* which also includes the onion, leek and chives; in fact, the generic name is Latin for garlic, leek or onion. Most members of the genus, which is fairly widespread throughout the world, have bulbs and bear linear or hollow centric foliage leaves (onion, for example) and the flowers are borne in umbels.



T. Edmondson

BROAD-LEAVED GARLIC



HERB PARIS

Ernest G. Neal

The broad-leaved garlic or ramsons is *A. ursinum* (from the Latin *ursus*, bear or constellation). It is a perennial attaining a height of six to twelve inches and spreading by means of underground stems from which arise masses of large, broad, oval leaves pointed at their tips and sheathing at their bases, scarcely distinguishable from the leaves of lily-of-the-valley.

The entire plant emits a strong smell of garlic — so pungent that farmers believe that if cows walk through such plants even without eating them their milk becomes tainted.

A floral umbel contains about fifteen white flowers, the umbel itself being subtended by a two-leaved spathe. Each flower has six white, lance-shaped perianth segments, six stamens and three carpels fused to form a three-chambered ovary with a long style.

There are other wild species of *Allium*, such as crow garlic (p. 340). Further species such as the onion (*A. cepa*), leek (*A. porrum*), shallot (*A. ascalonicum*) and chives (*A. schoenoprasum*) are cultivated. Leeks and chives also occur, but rarely, in the wild state. The edible garlic (*A. sativum*) is native to Siberia, but it has been cultivated for centuries in other countries, especially those around the Mediterranean. The North American wild meadow garlic (*A. canadensis*) was formerly eaten by Red Indians. The bulbs of all wild garlics, especially ramsons, have been popular with the old herbalists, especially for treating asthma and lung ailments: even Homer recommended garlic for protection against evil spells.

Eat leeks in Lide¹ and Ramsons in May
And all the year after the Physicians may play.

The strange-looking herb Paris or true love knot (*Paris quadrifolia*), a member of the small family TRILLIACEAE, Monocot., blooms in the woods of certain localities during May and June. The origin of its generic name

¹ March.

is doubtful, though it has been suggested that it is from the Latin *par*, equal, for the number of leaves never varies. The specific name refers to the rare arrangement of the leaves.

This perennial grows six to twelve inches in height. It has a strong underground stem from which aerial shoots emerge at irregular intervals. The aerial stem bears a whorl of four leaves near the top. Each leaf is broad and pointed at the tip (shaped like that of a plantain leaf, p. 336), and, unlike most monocotyledonous leaves, the veins are not parallel but form a network. At the top of this unusual shoot there is a single flower — equally strange. It has four long, green sepals, each ending in a sharp point; four (sometimes, but rarely, three) lance-shaped, greenish-yellow petals, six to ten stamens and an ovary with three to five chambers with a corresponding number of styles. The fruit is a black berry. The entire plant is poisonous.

Quite a number of woodland members of the orchis family (ORCHIDACEAE, Monocot.) begin to present their flowers during May; but none of them is very common. The orchis flower is, however, highly and specially organised, so now is the time to examine its general plan in case any of these wood orchids are found. In any event, the very common early purple orchis, which grows mainly in pastures (p. 241), sometimes also appears in woods, and it begins blooming this month. The following general description of the orchis flower is quoted from *Flowers in Britain*.

Most orchids conform to a general floral plan which is monocotyledonous though unique. The flower differs from most Monocotyledons in being highly irregular. This is evidenced in the perianth itself, in the stamen — there is only one, since the other five have become suppressed (in the genus *Cypripedium* two have survived), and in the union of the stamen with the style. All this leads to special adaptation for insect pollination.

The perianth is composed of two whorls of three segments each. All the segments are petaloid. The three outer segments are usually equal in size and are comparatively small. The three inner segments are very unequal both in size and form, and in some of the exotic flowers they are very large and highly coloured. The lower front segment called the labellum is the largest and is extended forwards to form a platform with drooping wings and backwards to form a spur. The other two inner segments form an upright hood over the fused stamen and style. The single stamen, together with the fused style, form what is called the column. The apical ends of the two anther-lobes of the stamen are directed downwards and are covered with a globular structure called the rostellum. This closes the entrance to the spur of the labellum which contains nectar. After alighting on the platform of the labellum, the insect, in trying to force its proboscis down the spur, pushes the rostellum aside and thus two adhesive disks are exposed which stick to the insect's head. In with-

drawing, the insect thus pulls the coherent contents of the anther-lobes (which are called pollinia) with it. The two pollinia are really masses of pollen which stand erect like two Indian clubs on the insect's head. After a few seconds, the pollinia gradually curve forwards and downwards. In this position they are carried by the insect to the next flower and immediately strike the stigma. Thus cross-pollination is ensured.

This process can be reproduced artificially by gently inserting the point of a pencil into the spur of an orchis flower. If it has not already been visited by an insect, the two pollinia will be found to be standing erect on the side of the tip of the pencil when withdrawn.

The family ORCHIDACEAE, Monocot., comprises a very large number of genera and species, and it is distributed throughout the world except the arctic regions. Many of the exotic tropical orchids are frequently beautiful though sometimes bizarre.

The genus *Ophrys* (p. 167) is represented this month by the very rare fly orchis (*O. muscifera*), the specific name being derived from the Latin *musca*, a fly, and *fero*, to bear, since the flower resembles a fly. This example occurs in some woods and blooms from now until well into July. The outer perianth segments are yellowish-green, and the inner ones reddish-brown with a blue patch on the labellum.



Harold Bastin

LARGE-FLOWERED WHITE
HELLEBORINE

Two of the helleborines are now in flower. They are the large-flowered white helleborine which blooms during this month only and the narrow-leaved helleborine which presents its flowers during May and June. The large-flowered white helleborine grows in a few woods on calcareous soils; the narrow-leaved helleborine in those woods which are situated in hilly districts. Both belong to the genus *Cephalanthera* (from the Greek *kephale*, head, and *anthera*, anther, for the anther is hinged on the top of the column). The large-flowered white helleborine is *C. grandiflora*, and the narrow-leaved helleborine, *C. ensifolia* — both specific names being of obvious significance.

These helleborines must not be confused with those of another genus, *Epipactis* (p. 496). The



flowers of both at present under consideration are large and white, those of *grandiflora* being the larger. Both plants have long, lance-shaped leaves, those of *ensifolia* being the narrower.

Twayblade, also a member of the ORCHIDACEAE, Monocot., is not so rare as those members of this family so far considered. It is an inhabitant of woods, etc., and blooms during May to July. It belongs to the genus *Listera* (*L. ovata*). It was named after Lister (1638-1712), physician to Queen Anne, and the specific name refers to the very large oval leaves which are pointed at their tips.

Twayblade is a perennial growing anything from six inches to two feet high. Half-way up the stem, two large oval, strongly ribbed, leaves are borne. The greenish-yellow flowers are borne in a long loose spike. Each flower has a two-lobed labellum. When touched by an insect visitor, the rostellum is violently ruptured and ejects a glutinous fluid which helps to fix the pollinia on the insect's head.



[Harold Bastin

GLADDON

More wood-rushes (*Luzula* species, p. 173), belonging to the monocotyledonous family JUNCACEAE, are now in bloom. Most wood-rushes are fundamentally similar to each other, so that already described on p. 173 must suffice as the type. Those which grow in woods include the great hairy wood-rush (*L. sylvatica*) which is a perennial attaining a height of one to two feet. It is one of the largest of the wood-rushes bearing its flowers during May to July. Then there is the broad-leaved hairy wood-rush (*L. pilosa*, from the Latin *pilus*, hair) which is smaller, growing between six and twelve inches high and blooming during May and June.

Finally among the May Monocotyledons is the rather rare gladdon, sometimes known as the gladwin, roast-beef plant or stinking iris (it also has many more restricted country names). It may be found blooming during May to July in dry woods, thickets or hedge-banks; but it is by no means so common as the yellow iris or flag (p. 392). Since its floral



WOOD SORREL

Ernest G. Neal

structure is closely similar, detailed consideration of the iris flower will be deferred until the yellow iris is in bloom (p. 392).

The gladdon (*Iris foetidissima*) belongs to the family IRIDACEAE, Monocot. The plant has a foetid smell, hence its specific name and the common name stinking iris. The entire plant is smaller than that of the yellow iris, growing two to three feet high, and its leaves are narrower. The outer perianth segments are usually purple and the inner ones either purple or yellow. (The generic name is from the Greek for rainbow, indicating the multitude of colours which iris flowers present.) The fruit capsule in due course opens out to reveal many large, orange-red seeds.

The gladdon was at one time supposed to be a cure for

cramp and convulsions and it was even infused into ale as a so-called 'cure' for cholera.

We must now devote some attention to the May Dicotyledons which thrive in woods; and among these one of the most interesting and certainly one of the most beautiful is the wood sorrel which blooms during May and June (Plate 6). (This plant must not be confused with the sorrels of the fields and pastures of May, p. 237).

In days of old this graceful plant was called alleluia because it bloomed at Easter-time. Even today it is the shamrock of English writers, though Dr. Hugh O'Neill,¹ while admitting this, advances much argument in favour of the yellow-flowering trefoil (*Trifolium dubium*), not the white clover (*T. repens*), and certainly not wood sorrel, as being the true shamrock of Irish and Scottish Gaelic languages, literature and lore. More localised names for wood sorrel include stubwort (because it often grows on moss stubs), wood-sour and wood-sower.

Wood sorrel (*Oxalis acetosella*) belongs to the small family OXALIDACEAE, Dicot., a family comprising tropical plants mainly and closely related to

¹ *Nature*, May 25, 1946.

MAY

the GERANIACEAE, Dicot. This plant is a perennial growing three to six inches high in woods and other shady places such as hedgerows and river banks. It perennates and spreads by means of underground stems, and, like some of the violets, sometimes bears cleistogamic flowers which become fertilised though they never open (p. 91).

The leaf is very characteristic — like the trefoils and clovers. There are three heart-shaped leaflets, but they have no pale bands on them as the clovers have. The leaflets are sensitive to light intensity and temperature so they close up during the night and inclement weather. The foliage is acid though edible, so it is sometimes eaten in salads, especially in the United States (the generic name is from the Greek *oxys*, bitter, and *hals*, salt). In rural districts it was once called green sauce.

The flowers appear during May and June. Each flower is solitary, borne at the end of a long, graceful stalk. The five sepals form a five-toothed cup. The five large, free petals are white veined with pink.

Woodsorrel's pencilled veil.

The Idle Flowers: R. BRIDGES

There are ten stamens and five carpels fused to form a five-chambered ovary with five free styles. The fruit is a capsule which adopts a curious method of ejecting its seeds: the capsule wall is elastic and when ripe it turns inside out suddenly, thus throwing the dry seeds some distance away from the parent plant.

Here, as in a niche of Sabbath, dwells the nervous shy wood-sorrel, feeding upon leaf-mould, quivering with its long-stalked cloves, pale of hue, and shunning touch, delicate wood-sorrel, coral rooted, shamrock-leafed, loved and understood of few, except good Fra Angelico.—*Cradock Nowell*: R. D. BLACKMORE

Archangel (*Lamium galeobdolon*), sometimes called yellow deadnettle (for it is in many respects similar to the white deadnettle, *L. album*, p. 222), and less frequently the yellow weaselnout, blooms during May and June in woods and thickets, and occasionally in well-sheltered hedgerows. The name weaselnout has the same significance as the specific name, *galeobdolon*, from the Greek *galee*, weasel, and *bdolos*, stench, since the crushed leaves emit a smell like that of a weasel.

Archangel is a particularly attractive member of the mint family (LABIATAE, Dicot., p. 158) displaying its yellow flowers in axillary whorls like the white deadnettle does. The plant is perennial, growing six to eighteen inches high and has long underground stems. The aerial stem is square in cross-section (a feature of the family); but the leaves are slightly more pointed than those of the white deadnettle. The only difference between the flower of archangel and that of white deadnettle (apart from that of colour) is that the lower lip of the former is divided

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into three lobes of equal size and the middle lobe is spotted and veined in reddish-brown which acts as a honey-guide (*Plate 6*).

The striking deep bluish-purple bugle is another member of the mint family (*LABIATAE*, *Dicot*, p. 158). It also flourishes in woods, frequently in association with archangel, but it has a somewhat longer flowering season — from May to July.

When purple bugles peeped in woods
'Neath darkest shades that boughs and leaves could make.

Wild Flower Noddy: J. CLARE

Bugle belongs to the genus *Ajuga* (*A. reptans*). This temperate genus has few British representatives. The origin of the generic name is uncertain — the suggestions so far made not being very convincing. The specific name refers to the plant's creeping habit effected by means of runners. There are other very local names for this plant, such as bellows.

It is a perennial growing four to twelve inches high. The entire plant is smooth. The stem is characteristically square in cross-section. The leaves, borne in pairs, each pair at right angles to the adjacent pair, are nondescript in shape, being more or less oblong with wavy margins.



BUGLE

Anne Jackson

The deep bluish-purple flowers are borne in dense whorls which collectively form a loose spike. The flower is typically labiate except that the upper lip is very short but slightly notched. The lower lip of the corolla is divided into three lobes.

Bugle has figured largely in old herbals as having all sorts of supposed medicinal virtues.

Sometimes a white variety of bugle occurs ; but it is rare.

The wood-ruff, sometimes called sweet wood-ruff, grows in shady woods and blooms during May and June. It is the second member of the bedstraw family (RUBIACEAE, Dicot.; p. 181) which has presented its blossoms so far. It is included in the genus *Asperula* (from the Latin *asper*, rough). It is *A. odorata*, for the plant emits a pleasant odour which is never so strong as when the plant is dying off, for then it smells sweetly of new-mown hay. It was once a favourite for pressing between linen in storage for it kept its perfume for a long time and was also considered to be a protective against moth. The common name is probably from the Anglo-Saxon *wudurofe*, *rofe* meaning fragrant. An old name for the plant was herb Barnaby.

The wood-ruff is perennial, creeping by means of a thin root-stock and growing one to two feet high. The small, lance-shaped leaves are arranged in whorls of six near the base of the aerial stems and seven to nine nearer the top. The small white, slightly scented flowers are borne in the leaf-axils at the top of the shoots. Each flower is composed of four small sepals, a funnel made up of four joined petals whose four lobes spread out in campanulate fashion at the open end, four stamens and two carpels united with two separate styles. The fruit is covered with hooks like those of other members of the family, for example, goosegrass (p. 35).

For, where the welcome sun came through,
A delicate, rising green was new.
The crosswise flowers were white and pure,
And started from a ruff demure,
And every tiny cluster lent
A fresh and most entrancing scent.
This pretty Puritan I claim,
And Woodruff is its charming name.

JOHN WYNN

In moist meadows the wood stitchwort (*Stellaria nemorum*) may be found. This is a close relative of the greater stitchwort (p. 157) and chickweed (p. 99) — all members of the family CARYOPHYLLACEAE, Dicot. The wood stitchwort blooms during May to July. Its specific name is Latin signifying a sylvan habitat. The leaves are broader than those of most stitchworts, and the white petals are very deeply cleft. There are three styles.

The flowers of the tuberous bitter vetch make their first appearance in May and they continue to do so until August. This plant grows in

woods and bushy places. It is not a member of the genus *Vicia* (as many vetches are) but of the genus *Lathyrus*, to which the grass vetch (p. 235) also belongs. Both genera are important members of the family LEGUMINOSAE, Dicot. (p. 95), and their flowers are typical of the papilionaceous members of the family. The tuberous bitter vetch is *L. macrorrhizus*, from the Greek *makros*, long, and *rhiza*, root, for the roots are tuberous. They are sometimes eaten, especially in rural districts of Scotland, for it is claimed that they allay hunger.

The tuberous bitter vetch has no tendrils. There are three or four pairs of long, pointed, lanceolate leaflets and a pair of fairly large stipules to each leaf. The purplish flowers are borne in clusters at the ends of long, thin, axillary stalks. There are also red and blue varieties.

The yellow pimpernel (a comparatively rare relative of the scarlet pimpernel, p. 368) also appears in some moist woods, presenting its yellow flowers during May to August. The plant is sometimes also called wood loosestrife — a more appropriate name, for though it is a relative of the scarlet pimpernel (natural order, PRIMULACEAE, Dicot.), it is sufficiently far removed from the scarlet pimpernel to be placed in a different genus which does, however, contain the yellow loosestrife (p. 503), that is *Lysimachia*. The yellow pimpernel is *L. nemorum*. The vegetative habit is like that of the scarlet pimpernel; but the flowers are more like those of yellow loosestrife. They are borne singly on long stems in the leaf-axils, and since the latter emerge in opposite pairs, it seems as if the flowers are also borne in pairs.

The common cow-wheat may be found blooming in copses and on heaths during May to September. It is a curious semi-parasite like certain other members of the same family, namely the snapdragon family (SCROPHULARIACEAE, Dicot., p. 226). We have already met one of these, the field or heath lousewort (p. 175). There are several cow-wheats, all belonging to the genus *Melampyrum* (from the Greek *melas*, black, and *pyros*, wheat, for the seeds of these plants look like small black wheat grains). The common cow-wheat is *M. pratense*. The specific name is erroneous, for the plant does not grow in meadows. The common name of these plants originates in the belief that cows like to eat them. In fact, it was Linnaeus himself who claimed that the best and yellowest butter is made from the milk of cows who had fed on them.

Common cow-wheat is an annual growing six to eighteen inches high and living semi-parasitically on the roots and underground stems of grasses.

The leaves emerge in opposite pairs. They are long and pointed though broad and deeply notched at their bases. The yellow flowers are borne in axillary pairs. There are four sepals forming a tube separating into four teeth. The five petals make an irregular corolla. They are

MAY

joined to form a long, gaping tube which ends in two lips, the upper two-lobed and the lower three-lobed. There are four stamens whose stalks bear sharp teeth. The fruit is a dry capsule.

The wild columbine is very rare indeed; but it does on occasions appear in woods and on heaths, presenting its flowers during May and June. It is very like the columbines so popular in gardens (especially in herbaceous borders), though it is smaller. The shape of the flower inspired the old country name of granny's bonnet, though such inspiration would not be forthcoming these days. This plant belongs to the buttercup family (RANUNCULACEAE, Dicot., p. 229), and though columbine and buttercup superficially appear very different, such differences are more apparent than real, and there are many important points of similarity. Columbine is a member of the small genus *Aquilegia*, which, according to some authorities, is derived from the Latin *aqua*, water, and *lego*, to collect, suggesting that water collects in the spurs of the petals (see below); but this is unlikely since the flower usually droops, so the spurs are upside-down; other authorities derive the name from the Latin *aquila*, eagle, referring to the floral spurs resembling eagle's claws. The wild columbine is *A. vulgaris* — an unfortunate specific name for a plant which is by no means common. The shape of the flower suggests a group of five pigeons (*columba*), hence the common name.

Columbine is a perennial growing one to two feet high. The graceful leaves are each made up of three large, stalked leaflets; each leaflet is again subdivided into three equal stalked parts, and each of these is fairly deeply lobed (usually three lobes).

The flowers are curious. Though there are many different colours and combinations of colours among the cultivated varieties, the wild columbine is purple. There are five purple, petaloid sepals and five large purple petals, each of which spreads out in front and extends backwards into a long spur containing nectar. As in the buttercup, there is a large number of stamens, but there are only five carpels. The fruit is a collection of follicles which split to release their seeds when ripe.

OTHER FLOWERS WHICH MAY APPEAR IN WOODS AND THICKETS DURING MAY

(The number following each flower is the page on which it is mentioned or described)

Anemone, Wood, 105	Campion, Red, 223
Arum, Wild, 160	Celandine, Lesser, 155
Ash, Mountain, 194	Cinquefoil, Strawberry-leaved, 123
Birch (<i>B. pubescens</i>), 199	Cuckoopint, 160
Bryony, Black, 218	Dandelion, 129
Bryony, White, 218	Globe flower, 231
Buckthorn, Alder, 203	Goldilocks, 156

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Hawthorn, 191	Primrose, 107
Hazel, 87	Rowan, 194
Hellebore, Green, 114	Sallow, 149
Herb Robert, 225	Service, Wild, 195
Holly, 200	Spurge, Wood, 114
Hornbeam, 198	Star of Bethlehem, White, 167
Jack-in-the-pulpit, 160	Star of Bethlehem, Drooping, 167
Lords and ladies, 160	Stitchwort, Greater (edges), 157
Maple, Common, 197	Strawberry, Barren, 123
Maple, Great, 198	Strawberry, Wild, 227
Mercury, Dog's, 124	Sycamore, 198
Mercury, Herb, 124	Toothwort, Great, 168
Mezereum, 85	Violet, Dog, 174
Mezeron, 85	Wayfaring tree, 202
Mistletoe, 120	White beam, 194
Moschatel, 164	Willow, Almond-leaved, 151
Oaks, Common, 143	Willow, Auricled, 151
Orchis, Early purple, 241	Willow, French, 151
Orchis, Spider, 164	Willow, Goat, 149
Oxlip, 164	Willow, Grey, 151
Parsley, Wild beaked, 166	Willow, Pussy, 149
Pear, 194	Willow, Round-eared, 151

22

HEDGEROWS

Set him before a hedgerow in a lane,
And he was happy all alone for hours.

Edward Crowhurst: R. BUCHANAN

MOST of the plants which make up the hedge proper are either large shrubs or those trees whose growth has been trained into a bushy habit by constant clipping and by the competitive growth of other plant members of the hedge; the latter are considered as trees in this book; for by nature that is what they are.

During May, however, we meet plants of a still different habit, namely, climbing plants. Climbers and scramblers play an important part in the growth and shaping of a hedge. This month, two very beautiful climbers attract our attention, for now they are beginning to bloom and also to present their particularly lovely leaves. They are the two bryonies — the white and the black. Both are conspicuous now because their long trailing stems festoon the hedges for considerable





WHITE BRYONY AND BLACK BRYONY

Top, male and female flowers of white bryony ; bottom, male and female flowers of black bryony

distances, and their leaves are large, though the flowers are not very inspiring. During the autumn both species are conspicuous, for then they produce fruits which in both cases are bright red berries (p. 577).

And scallop'd briony mingling round her bowers,
Whose fine bright leaves make up for want of flowers.

Sunday Walks : J. CLARE

It is very important to realise, however, that, apart from their climbing habit, these two plants are very different from each other ; in fact, the white bryony is a Dicotyledon, whereas the black is a Monocotyledon. The adjectives 'white' and 'black' apparently have no significance, except that, as in other cases, they have been applied to distinguish one from the other.

Both bryonies are climbers commonly found on hedges though they also appear in thickets and more or less open woods. The white bryony has a long flowering season (May to September), whereas the black blooms during May and June only (*Plate 7*).

The white bryony (sometimes, though rarely, called the red bryony)

THE FLORAL YEAR

is a member of the melon family (CUCURBITACEAE, Dicot.). This very important family, composed mainly of tendril climbers, is widespread throughout temperate and tropical regions, though, strange to relate, the white bryony is the only member of the family indigenous to Britain; yet many cultivated members of the family are familiar to us, for example, vegetable marrow, pumpkin, gourd, cucumber, melon and other more exotic forms grown in greenhouses.

The white bryony is a perennial belonging to the genus *Bryonia*, a small genus of which this plant is the most northerly representative. It is *B. dioica*, the generic name coming from the Greek *bruo*, to burst forth, since it starts the season's growth with a spurt; the specific name is also from the Greek *di*, two, and *oikos*, house, for, as in most members of the family, its flowers are unisexual and the two sexes are borne on different plants. It blooms from May to September.

The black bryony is a perennial Monocotyledon belonging to the family DIOSCOREACEAE, Monocot. Here again this is the only representative of the family indigenous to Britain. Members of this family are more at home in tropical and warmer temperate regions. Nearly all of them, however, are climbers with underground stem tubers, some of which, such as the tropical and sub-tropical yams, are edible. Even black bryony has stem tubers which are actually outgrowths of the two lowest stem internodes which grow below soil-level. These are not edible; but the plant is able through them to hibernate during the winter months. Black bryony is a member of the genus *Tamus* (from the Latin for a climber), and since it is so common it has been specifically named *T. communis*. It blooms during May and June.

White bryony clings to its supports by means of graceful though strong tendrils. Its leaves are particularly beautiful, being palmately divided into five indented lobes. Black bryony, on the other hand, maintains itself on the hedgerow by twining its long stems around the stronger supporting plants. Its large leaf is also very different from that of white bryony for it is heart-shaped though very pointed at the apex.

As already stated, there are separate male and female white bryony plants. Both male and female flowers are superficially similar, for each has fairly large, pale-green petals. The male flower has five united sepals, five petals arranged in stellate form, and three stamens. The female flower is devoid of stamens but has a three-chambered ovary—conspicuous because it is situated below the floral whorls. The style bears three bulky stigmas.

The flowers of black bryony are far less conspicuous than those of the white for they are very small and are borne in long, loose, axillary racemes. They also are unisexual and the sexes are segregated on different plants. Both male and female flowers are greenish in colour. As in nearly all Monocotyledons, the floral parts are in threes. These is a perianth of six pale-green segments. The male has six stamens and the female three carpels

fused to form a three-chambered ovary bearing three short styles.

The fruits of both bryonies are described on p. 577.

The white bryony has figured in past folk-lore and quackery. It has sometimes been looked upon as the notorious mandrake, though the plant around which absurd beliefs grew up and which is the true mandrake is *Mandragora officinarum*, a native of those regions stretching from the Mediterranean to the Himalayas, and a member of the potato family (SOLANACEAE, Dicot.). The root of the true mandrake is fleshy and often becomes forked, thus assuming the likeness of the lower parts of the human body. This was supposed to shriek when tugged from the soil.

And shrieks like mandrakes' torn
out of the earth,
That living mortals, hearing
them, run mad.

Romeo and Juliet, Act IV,
Sc. 3: SHAKESPEARE



*From the original in the Wellcome
Historical Medical Museum, London*

A MANDRAKE AMULET OF TODAY
From Unter den Linden, Berlin

The true mandrake contains a soporific drug.

Not poppy, nor mandragora,
Nor all the drowsy syrups of the world
Shall ever medicine thee to that sweet sleep
Which thou ow'dst yesterday.

Othello, Act III, Sc. 3: SHAKESPEARE

But the white bryony itself has figured in magic and witchcraft.

The white bryony, whose leaf is not unlike that of the grape, has a magical reputation, and the cottage folk believe its root to be a powerful ingredient in love potions, and also poisonous. They identify it with the mandrake. If growing in or close to a churchyard, its virtues are increased, for, though becoming fainter as they lengthen, the shadows of the old superstitions linger still.

Wild Life in a Southern County: RICHARD JEFFERIES

THE FLORAL YEAR

Medicinal virtues have also been ascribed to the black bryony; at one time it was used for treating blood ailments.

Some of the most common and conspicuous of our hedgerow herbs are now beginning to bloom in the carpet beneath the hedge proper.

One of the most outstanding of these is the white deadnettle, which, though frequently blooming prolifically from May until September, often manages to display a few blooms throughout the year. This plant frequents hedgerows where there is plenty of grass, though it also flourishes along roadsides and even in waste places.

The white deadnettle belongs to the important mint family (LABIATAE, Dicot.), already described in connexion with ground ivy (p. 158). It is a member of the genus *Lamium* (from the Greek, *laimos*, throat, referring to the structure of the corolla, which is typical of the family). White deadnettle is *L. album*, the specific name indicating the colour of the flowers. It usually grows in large clumps because it spreads by means of very persistent, tough underground stems. The aerial stems are square in cross-section — a diagnostic feature of the mint family. The leaves are heart-shaped though they are very pointed at the apex and deeply serrated. They are arranged in opposite pairs, each pair lying in a plane at right angles to the adjacent pair. They are very like those of the stinging nettle; but they have no stinging hairs, hence the common name.



Ernest G. Neal

WHITE DEADNETTLE

The white flowers are borne in axillary whorls, six to a dozen in each whorl. Though the flower is much larger than that of the ground ivy (p. 158), it is very similar in fundamental construction. So too is the fruit.

Another very important family, the CRUCIFERAE, Dicot., is represented in the May hedgerows by the common garlic mustard. The CRUCIFERAE (p. 95), like the LABIATAE, has very characteristic features (the cruciform flower, for example), which means that the flower of garlic mustard is, apart from colour (for it is white), very like that of the wallflower (p. 182).

More localised names for garlic mustard (*Erysimum alliaria*) are Jack-by-the-hedge and sauce alone. The generic name is derived from the Greek *erysimon*, an aromatic plant, and the specific name from the Latin *allium*, garlic, for the leaves when bruised emit that smell. (The plant must not be confused with the true garlics, however, for they are totally different plants.) The name 'sauce alone' refers to its use in days of old for the preparation of sauces: most members of the CRUCIFERAE are edible, especially those of the cabbage tribe. Medicinal virtues have also been claimed for garlic mustard, and it was especially recommended for the treatment of ulcers.

Garlic mustard is a robust biennial growing two to three feet high, and presenting its small white flowers during May and June.

The very large leaves are heart-shaped though tapering suddenly to a sharp apex and having deep, uneven serrations. The white flowers are borne in inflorescences resembling those of the shepherd's purse (p. 97), that is, in the form of an almost horizontally flattened disk, though the axis of the inflorescence and the fruit stalks continue to grow still longer after fertilisation has occurred.

Provided the hedge-bank is damp, well covered with other vegetation, and not too exposed, then red campions might now be displaying their beautiful rose-coloured flowers. They appear over a long season — May to August, and sometimes even much later. Red campion is also known as rose campion, cock robin and red robin — all because of the comparatively large, rose-coloured flowers. But there are many other more localised names for it, such as adder's flower, gentry flower, bachelor's buttons (a name given to other plants too), bull's eye and cuckoo flower (not to be confused with the more commonly called cuckoo flower or lady's smock, p. 185). Frequently the red campion also grows in open woods associated with bluebells (p. 205).

Red campion is a member of the pink family (CARYOPHYLLACEAE, Dicot., p. 99) to which other campions, carnations, stitchworts and chickweeds also belong. Together with the white campion (p. 186) and ragged robin (p. 186) it is a member of the genus *Lychnis* (*L. dioica*). The derivations of the generic and specific names are given on pp. 186, 220; but the origin of the common name 'campion' is uncertain. As the specific name implies, the flowers are unisexual and the two sexes are segregated on different plants. In this respect red campion resembles the white campion, but not the ragged robin, for this is hermaphrodite.

This plant is a perennial, growing one to three feet high. It resembles the white campion in vegetative habit (figured on p. 369), though the stems of the former are more slender and the leaves less broad.

Just as one begins to feel a little sad because the wood-hyacinths pale, the red campion takes a brighter hue and holds up a bolder stalk, determined to see over the heads of the now fast-shooting green crocuses of the bracken.

The Garden that I Love: ALFRED AUSTIN

THE FLORAL YEAR

The branching of the shoot is very characteristic of the family (p. 157). The leaves are lance-shaped and they and the stems and even the sepals of the flowers have a reddish tinge: they are all very hairy too.

The flower is fundamentally similar to that of the ragged robin, though the petals are not divided into linear segments. Each is heart-shaped with one deep cleft. The male flower has five stamens, and the female has five carpels fused to form a single-chambered ovary with five very conspicuous free styles. The fruit is a large, spherical capsule with ten teeth on its upper surface.

A member of the geranium family (GERANIACEAE, Dicot., p. 177), namely herb Robert, begins blooming during May and continues to do so right into August. Herb Robert also grows in open woods, on waste places and even in coastal areas.

Like the dove's-foot crane's bill, it belongs to the genus *Geranium*



RED CAMPIONS

Ernest G. Neal

(p. 177). It is *G. robertianum*, the specific name having been chosen to honour Abbot Robert, the French Cistercian monk. A very common, yet beautiful plant, herb Robert has inspired a host of local names, such as poor robin, Jenny wren, robin red shanks, red breasts, dragon's blood, dog's toe, little bachelor's buttons and so forth.

It is an annual growing six inches to two feet high. The strong hairy stem is a pronounced red in colour and the five-lobed leaves are deeply cut. The latter turn bright red during autumn (p. 583).

Now when the primrose makes a splendid show,
And lilies face the March winds in full blow,
And humbler growths as moved with one desire
Put on, to welcome spring, their best attire,
Poor Robin is yet flowerless; but how gay
With his red stalks upon this sunny day!
And, as his tufts of leaves he spreads, content
With a hard bed and scanty nourishment,
Mixed with the green, some shine not lacking power
To rival summer's brightest scarlet flower;
And flowers they well might seem to passers-by
If looked at only with a careless eye;
Flowers — or a richer produce (did it suit
The season) sprinklings of ripe strawberry fruit.

Poor Robin: WORDSWORTH

The small purplish-pink flowers and the fruit are characteristic of the genus — in fact, a smaller version of the dove's-foot crane's bill (p. 177), though the petals are not notched.

The whole plant has a disagreeable odour; that is why it is sometimes called stinking crane's bill. It is supposed to have certain medicinal virtues, especially as an astringent, and at one time was recommended for treating gout. Country-folk also used it once upon a time for treating certain cattle diseases.

The bush or hedge vetch — a common and conspicuous hedge-row plant — presents its purple flowers from May until August. It is a member of the pea family (LEGUMINOSAE, Dicot., p. 95) and belongs to the genus *Vicia*, a



HERB ROBERT

Harold Bastin



HEDGE (BUSH) VETCH

name derived from the Latin *vincio*, to bind, since this plant, like other vetches, is a tendril climber and the tendrils sometimes twine firmly round the stems and leaves of supporting plants binding them closely together. The bush or hedge vetch is *V. sepium*, the specific name being derived from the Latin *sepes*, a hedge.

It is a perennial having a strong creeping rootstock and long straggling thin aerial stems, one to three feet high, which support themselves by means of their tendrils. These are modified from the terminal and more distal pairs of lateral leaflets. About four to seven pairs of lateral leaflets remain unmodified as small, oval leaf-blades. At the base of each leaf-stalk is a pair of small stipules.

The purple flowers are borne in small clusters on short axillary stalks. Each flower is typically papilionaceous (p. 23), and

fundamentally like that of the gorse (p. 95), except that in the case of the bush vetch only nine stamens are joined along about two-thirds of their length, and the tenth, the upper, stamen is entirely free. The fruit is a typical leguminous pod.

Of all the different speedwells (field speedwell, p. 180, and wall speedwell, p. 183, have already begun blooming), the germander speedwell is perhaps the most common. It is certainly the most popular. The origin of the common name speedwell is obscure: it might mean 'goodbye' since the petals fall as soon as the flower is plucked.

All speedwells belong to the genus *Veronica* (p. 180) of the family SCROPHULARIACEAE, Dicot. All members of this family — a very important cosmopolitan family — show floral irregularity (well exemplified in the snapdragon), though some are not as irregular as others. The genus *Veronica* is not very irregular. The floral structure of the many speedwells is fairly consistent, so that a consideration of germander speedwell in detail will suffice to cover the others which differ among themselves



mainly in vegetative habit.

Germander speedwell (*V. chamaedrys*, from the Greek *chamai*, on the ground, and *drys*, oak, from the so-called resemblance of the leaves to those of oak) is a widely distributed perennial, growing six to twenty inches high and displaying bright blue flowers during May and June, sometimes later. In a few localities it is called bird's eye, and in parts of the West Country it is erroneously known as forget-me-not. It is very versatile in its choice of habitat, but seems to thrive best on hedge-banks, the edges of fields, cultivated ground and waste land.

The stem bears hairs in two opposite longitudinal fringes, and these move round in position from internode to internode. The leaves are borne in pairs, each pair lying in a plane at right angles to the next. Each leaf is sessile, oval and pointed and regularly serrated — not much like an oak leaf in spite of the specific name.

The small bright blue flowers are borne in long, loose racemes on graceful stems which emerge from the upper leaf-axils. Each flower is about a third of an inch in diameter (*Plate 9*).

Most members of the family SCROPHULARIACEAE have five sepals and five petals (often very irregular in size and form); but in the genus *Veronica* the number of both has been reduced to four during evolution. In the case of the sepals, one of them has just disappeared, though sometimes the others are of unequal size. In the corolla, however, the two upper petals have fused to form a single large one, then the two side petals are slightly smaller though equal to each other, and the lower petal is smaller still and frequently paler in colour. These four petals are united only at their bases. The number of stamens has been reduced to two. The two carpels are fused to form a two-chambered ovary with a single thin style. The fruit is a dry capsule surrounded by a persistent calyx.

The wild or wood strawberry, which, unlike the barren strawberry or strawberry-leaved cinquefoil (p. 123), bears fleshy red receptacles —



Harold Bastin

GERMANDER SPEEDWELL

THE FLORAL YEAR

small versions of the familiar garden strawberry 'fruit' (p. 29), presents its flowers during May to July. The fruit are ripe in June and July, both flowers and fruit frequently appearing on the same plant simultaneously. The wild strawberry grows on hedgebanks and also in open woods.

The strawberry grows underneath the nettle
And wholesome berries thrive and ripen best
Neighbour'd by fruit of baser quality.

Henry V, Act I, Sc. 1 : SHAKESPEARE

Though both wild and barren strawberries are members of the same family (ROSEACEAE, Dicot.), they are placed in separate, though closely related genera. The wild strawberry is *Fragaria vesca*, from the Latin *frago*, to emit a fragrance, and perhaps *esca*, food (bait or enticement). It is a small procumbent perennial growing two to six inches high and spreading by means of runners (p. 15). The leaves are very like those of the barren strawberry though larger. Both stems and leaves are hairy.

The flowers of both these strawberries are similar (p. 124), but the arrangement of the true fruits varies considerably owing to the difference in growth of the floral receptacle after fertilisation has taken place. The fruits of both are collections of dry achenes, but those of the barren strawberry, even when quite ripe, are attached to a dry, unswollen receptacle, whereas the receptacle of the wild strawberry has become swollen and fleshy and red in colour (p. 29). This is the edible part and, though very small compared with the luscious cultivated strawberry, it is delicious to eat.

Open hither, open hence
Scarce a bramble weaves a fence,
Where the strawberry runs red,
With white star-flower overhead.

The Woods of Westernmain : MEREDITH

In some localities, another species of strawberry, the 'haut-bois' (*F. moschata*), may be found. Its 'fruit' is larger than that of the wild strawberry; in fact the plant was probably a garden escape from the earliest days when strawberry cultivation first began.

OTHER FLOWERS WHICH MAY APPEAR IN HEDGEROWS DURING MAY

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Blackthorn, 122	Cuckoopint, 160
Buckthorn, Purgine, 203	Daisy, 127
Bullace, 147	Dandelion, 129
Celandine, Lesser, 155	Deadnettle, Red, 179
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 Strawberry, Barren, 123
 Sycamore, 198
 Violet, Dog, 174
 Wayfaring tree, 202
 Willow, Goat, 149
 Wood sorrell, 212

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FIELDS AND MEADOWS

When the young year is sweetest, when the year
 Is a symphony of sound and scents and seeings
 That gather in the sky in shining clouds,
 And souls fly nearer their glad goal a moment
 — Then Collins Meadow is the place to walk.

A Pastoral: EDMUND BLUNDEN

THE fields and meadows are now changing their homogeneous greenness in favour of a patchwork of colour, for the summer flowers are beginning to respond to warmer and brighter weather.

Two of the more common buttercups or crowfoots — the bulbous and the creeping — soon will contribute their golden yellow share to this patchwork.

These golden buttercups are April's seal.

To — : HOOD

The buttercup family (RANUNCULACEAE, Dicot.) appeared on the floral scene very early in February (p. 86) and again in March (p. 105); but it was not until April that the genus *Ranunculus* presented itself in the form of goldilocks (*R. auricomus*) and lesser celandine (*R. ficaria*). Now the genus appears again represented, the bulbous buttercup is



Harold Bortin

CREeping BUTTERCUP

R. bulbosus and the creeping buttercup, *R. repens*; both specific names being self-explanatory. As in the case of all terrestrial species of *Ranunculus*, the flowers are yellow, in contradistinction to the aquatic species which are usually white (p. 273). In earlier times buttercups were called butter-flowers; the change-over occurred some time during the middle of the eighteenth century. Sometimes the terrestrial buttercups are called crowfoots, though usually today this name is reserved for the aquatic species. The French call the former *boutons d'or*.

The bulbous buttercup is a very common perennial growing six inches to two feet high in pastures and meadows, and it continues blooming until August. The creeping buttercup is also a perennial, but it is somewhat procumbent and attains a height of only six to twelve inches. It too flourishes in damp fields and meadows (and sometimes along waysides and on river banks) and blooms during the same season. The leaves of both species are divided into three lobes and each lobe is deeply segmented. The leaves of all terrestrial buttercups are bitter to the palate, so they are avoided by browsing animals, including cattle. The bulbous buttercup has a bulb loosely constructed from the swollen leaf-bases: it is said that long ago beggars took advantage of their acidity by rubbing them on the skin, thus raising sores to inspire sympathy. The creeping buttercup has

creeping runners; it is often therefore a nuisance as a weed on cultivated ground.

The flowers of both species are similar to each other and to other species of the genus *Ranunculus*. That means there are usually five pale green sepals, about five (sometimes more) yellow petals which in both species are heart-shaped with a nectary at the base, and an indefinitely large number of yellow stamens, and an indefinitely large number of free carpels. Though the flowers produce nectar, bees seldom if ever visit them, though other insects do. This is mentioned by J. Clare who, referring to the bee, wrote:

Who breakfasts, dines, and most divinely sups,
With every flower save golden buttercups,
On whose proud bosoms he will never go,
But passes by with scarcely "howd'ye do?"
Since in their showy, shining gaudy cells,
Haply the summer's honey never dwells.

The Eternity of Nature: J. CLARE

Clare's observation was accurate enough, but his interpretation was faulty.

The fruit is a collection of dry achenes (p. 29), each achene being one fertilised carpel containing one seed.

And O! the buttercups! that field
O' the cloth of gold, whose pennons swam
When France set up his liliated shield,

His oriflambe,
And Henry's lion-standard rolled:
What was it to their matchless sheen,
Their million, million drops of gold

Among the green!

The Letter L: JEAN INGELOW

Another member of the RANUNCULACEAE, Dicot., namely, the globe flower (*Trollius europaeus*), sometimes called the mountain globe flower, for it grows in damp rocky mountain pastures, blooms during May to July. (It sometimes also occurs in damp woods.) In Scotland it



Harold Bastin

GLOBE FLOWER

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is called witch's gowan. The globe flower is a representative of a small genus which derives its name from the Latin *trulla*, a deep ladle, from the shape of the flower. As in the marsh marigold (p. 138), the globe flower has five to fifteen pale yellow sepals, but in the latter these completely enclose the rest of the flower, with the result that it must have recourse to pollinating itself. The five to fifteen petals are linear and insignificant. There are the usual indefinite number of stamens and carpels. The fruits — again as in the marsh marigold — form a collection of follicles which split to release their seeds.

This perennial, growing six to eighteen inches high, is not very common, though very large and handsome specimens may be seen under cultivation in parks and gardens, especially in rockeries. The large leaves are divided into five lobes, each of which is deeply serrated.

The cowslip (*Primula veris*) is a member of the primrose family (PRIMULACEAE, Dicot., p. 107); in fact it is very like the primrose itself and is a member of the same genus. Indeed verbal description of these two plants could be well-nigh the same; for it is only in certain botanical details that the two plants vary, though these are sufficiently obvious to prevent anyone from mistaking a cowslip for a primrose (Plate 8).

These cowslips in a spring night born
Grow gentle, soft and wear no thorn,
Then roll their sweetness to a ball,
The hush of breath, confining all,
Makes orange smell and lemon scent
Into a flowery parliament
Where every cowslip talks, as one,
And nothing, but that scent, is done.

Cowslips: SACHEVERELL SITWELL

The cowslip blooms later than the primrose does (May to June) and it grows in more open fields and pastures. It is a perennial, and attains a height of anything from four to twelve inches — it usually grows higher if surrounded by fairly long grass or on grassy embankments and slopes. The leaves are like those of the primrose and many other members of the genus *Primula*. The flowers are borne in simple umbels at the ends of long, thick stalks. This again is diagnostic of the genus (though in some cultivated species the flowers emerge in several whorls). The floral structure is basically the same in both flowers, so there are pin-eyed and thrum-eyed cowslips. But cowslip flowers are smaller than those of primrose and they are somewhat yellower in colour. The corolla is spotted orange-red at its base.

On her left breast
A mole cinque-spotted, like the crimson drops
I' the bottom of a cowslip;

Cymbeline, Act II, Sc. 2: SHAKESPEARE

MAY

When the flowers are still in bud they are erect in the umbel. As they mature, they open out (though never to form such a flat salver as the primrose corolla does) and all members of the umbel in due course droop. After fertilisation the floral organs wither except the fertilised ovary which is a capsule. This returns to the erect position so that the dry seeds are better shaken out through the five valves at the top of the capsule, thus ensuring wider dispersal.

There is an old country recipe for making cowslip wine which can be quite potent. Cowslip cream and cowslip syrup are two old English dishes now out of fashion. But country children like best to make cowslip balls from the umbels. In some parts of the country they call the flower, fairy cups.

Where the bee sucks, there suck I :
In a cowslip's bell I lie.

The Tempest, Act V, Sc. 1 : SHAKESPEARE

In the United States they call the marsh marigold (*Caltha palustris*) cowslip.

The sheep and cows are crowding for a share
And snatch the blossoms in such eager haste
That basket-bearing children running there
Do think within their hearts they'll get them all
And hoot and drive them from their graceless waste.
— For they want some for tea and some for wine
And some to maken up a cuckaball,
To throw across the garland's silken line
That stretches o'er the street from wall to wall.

Cowslips : J. CLARE

It seems fairly certain that the common names cowslip and oxlip (p. 164) mean the droppings or 'slop' of cows and oxen.

The two most common clovers — the red or purple and the white or Dutch — are now beginning their long-flowering season (until September) in meadows everywhere. Though many people look upon the white clover as the shamrock, this is unlikely (p. 212). Both clovers are valuable fodder crops. They are members of the genus *Trifolium*, an important genus of the pea family LEGUMINOSAE, Dicot. (p. 95). Red clover is *T. pratense* (living in a meadow) and white clover is *T. repens* (for it has a prostrate, creeping stem). Both are perennials; but the red species is altogether larger and more robust than the white, the former attaining a height of twelve to eighteen inches and the latter three to eighteen inches. The stem and leaves of red clover are hairy (Plate 8).

The foliage leaves of both species are trifoliate, and pale-green bands cross each leaflet. A pair of long stipules grow at the base of the leaf-stalk. The flowers are borne in dense heads, the red flowers of *T. pratense* being larger than the white ones of *T. repens*. Each flower is typical of the pea tribe (p. 22), though the wings and the keel towards their bases

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form a tube at the bottom of which is a goodly supply of nectar. The mechanism whereby the visiting insect gets at the nectar is one of the simplest in the family. The insect rests on the wings and thus depresses the keel so that the stamens are enabled to emerge for pollination. After the insect has left, the keel returns to its original position. The nectar of the white clover flower is available to all types of bee (including the hive bee); but the tube of the red clover is too long for any but the bumble-bee. In fact, in New Zealand the farmers found that their red clover did not set seed: soon they learned that this was because of the absence of bumble-bees in that country; so they imported some of these bees and thus ensured the continuity of their crops of red clover.

The pedigree of honey
Does not concern the bee;
A clover, any time, to him
Is aristocracy.

Poems: EMILY DICKINSON

In certain parts of England, especially the west, the red clover is still called honeysuckle.

Both red and white clovers are useful for enriching the soil; for, as in most leguminous plants, their roots bear nodules which contain bacteria capable of 'fixing' atmospheric nitrogen and thus supplying extra nitrates to the soil. But, in spite of this, both red and white clovers, especially the latter, sometimes prove to be weeds.



WHITE OR DUTCH CLOVER

Ernest G. Neal



Harold Bastin

SERIES OF PHOTOGRAPHS SHOWING THE RESPONSE OF WHITE CLOVER
TO VISITING BEES

The fifth head has only one flower left unvisited ; the sixth has none

From the red clover a wine is sometimes made, and this is said to act as a tonic for the heart.

The blossoms of two more vetches make their appearance during May. These, like the clovers, are members of the family LEGUMINOSAE, Dicot. One is a close relative of the hedge or bush vetch (*Vicia sepium*, p. 225); this is the common vetch (*V. sativa*), an annual growing six to eighteen inches high. It is a good fodder plant flourishing in damp meadows and waysides and blooming from May until July. The large blue flowers are borne in pairs in the axils of the leaves. Apart from this it is very like the hedge or bush vetch (p. 225). The seeds and even the pods are edible (*Plate 8*).

The other vetch, grass vetch (or vetchling), is sufficiently different to warrant placing in another genus, *Lathyrus* — a genus containing several other vetches and certain peas including the everlasting and sweet peas. The generic name is derived from the Greek *la*, very, and *thouros*, impetuous, for some members of the genus yield active purgatives and aphrodisiacs. The grass vetch is *L. nissolia*, after Nissolle, the French



GRASS VETCH

Showing flattened leaf-stalks, flowers
and fruits

botanist (1647-1735). It is not a common plant, but may sometimes be discovered in gravelly fields—an annual, blooming during May and June and attaining a height of one to two feet.

It is quite a different vetch from those of the *Vicia* genus. For example, all the leaflets have become suppressed, and the leaf-stalks modified to form flattened, grass-like expansions. The small crimson flowers are borne singly or in pairs on long, thin axillary stalks.

In dry pastures and certain waste places still another member of the family LEGUMINOSAE, Dicot., namely black medick or nonsuch, begins blooming and carries on through a long season until September. It is a very common plant belonging to the genus *Medicago*, a large genus distributed over Europe and North and South African areas. The generic name may be derived from the Latin *medicus*, curative, or from *Media* (country of the ancient Medes), from which the genus probably originated. There are half a dozen species in Britain: black medick is *M. lupulina* (from the Latin for wolf or hook), and, like lucerne (*M. sativa*), it makes a good fodder plant. Farmers often call it hop trefoil, which is confusing, for there is another hop trefoil (*Trifolium procumbens*, p. 332); and confusion is made even worse confounded for some people wear it as shamrock on St. Patrick's Day.

Black medick is a procumbent annual attaining a height of anything from six inches to two feet (Plate 8).

The leaves are trifoliate and each leaflet is more or less heart-shaped being serrated at its broader end. The very small yellow flowers are borne in dense, almost spherical, heads. The explosive black pods are not enshrouded by the dead remains of the flowers as in some species of this genus, and each pod contains only one seed which is relished as food by a few country people.

We now meet an almost exclusively summer family, namely POLYGONACEAE, Dicot., containing the docks, persicarias, sorrels and rhubarbs. It is not a very large family, but its members are mostly very common



Harold Bastin

SHEEP'S SORREL

and conspicuous for some have very large leaves (this especially applies to the docks and rhubarb). It is distributed mainly in north temperate regions, and most members are herbs. The leaves and stems of the majority of species are edible. The flowers are individually small, but they are usually borne in large, striking inflorescences. But the time has not yet come for most members of this family to present their flowers, though the two sorrels (not to be confused with wood sorrel, p. 212) are now blooming. They both belong to the genus *Rumex* which also embraces the docks. The generic name is Latin for sorrel, and it probably came to us from the French *surelle*, a diminutive of the Old High German *sur* meaning sour, for the leaves are sour.

The common sorrel (*R. acetosa* — from the Latin *acetum*, vinegar) differs in certain respects from sheep's sorrel (*R. acetosella* — the specific name being a diminutive of the former). Both grow profusely in dry meadows, though sheep's sorrel prefers even drier sites than common sorrel does. Both are perennial, common sorrel attaining a height of one to two feet and sheep's sorrel three to fifteen inches, and both bloom during May to July. Sheep's sorrel frequently proves to be a troublesome weed because of its persistent root-stock.

The general habit of the sorrels is less robust than that of the docks. The leaves are certainly much smaller. They are arranged alternately on the stem. Each has a fairly long stalk and the broad blade is roughly

arrow-shaped. The leaves of sheep's sorrel are smaller than those of common sorrel and its blades are narrower, though the basal projections are more pronounced. The leaves of both species are tinged with red; those of sheep's sorrel often turning a fiery red later on in the year.

The small flowers are borne in long racemes, loose in sheep's sorrel. Those of the common sorrel are greenish, whereas those of sheep's sorrel are reddish tinged with yellow (the male being yellower). They are unisexual, and whereas a common sorrel may bear nothing but male or nothing but female flowers or a mixture of both, the sexes of sheep's sorrel are invariably segregated. The individual flower is inconspicuous because it is small and has no petals. There are six sepals, the inner three being larger than the outer three; the outer whorl in the common sorrel, but not in the sheep's sorrel, is reflexed. The male flower has six stamens and the female three carpels with three large, branched styles. The last-named are particularly valuable, for the flower is wind-pollinated. The fruit is a triangular nut which becomes enclosed in the sepals which themselves enlarge after fertilisation.

Though sorrel leaves are acid they are edible. Children sometimes eat them, calling them 'sour leaves' or 'sour docks'. The leaves are also good to eat in sandwiches and salads.

The meadow saxifrage grows in grassy meadows and sometimes on banks and blooms during May and June. It is a member of the family SAXIFRAGACEAE, Dicot., (p. 183) and a close relative of the rue-leaved saxifrage (*Saxifraga tridactylites*, p. 183), though larger. It has been assigned the name *S. granulata*, and is the most common and the largest of those members of the genus indigenous to Britain, growing six to twelve inches high and perennating and multiplying from season to season by means of bulbiferous root tubers.



MEADOW SAXIFRAGE

Top left, section of flower; bottom right, root tubers

Unlike the rock-loving members of the family, the leaves of the meadow saxifrage are not fleshy. They are unusual in shape, somewhat like that of a kidney in section with deep regular lobes. Those growing on the aerial stems have scarcely any stalks, whereas the radical leaf-blades are borne on long stalks.

The flowers are large, white and star-like. There are five sepals joined to form a five-toothed tube, five large white petals, ten stamens (five on longer stalks than the rest) and two carpels joined together at their bases then diverging.

Alchemilla, a not very typical genus of the rose family (ROSACEAE, Dicot., p. 302), is represented in May by parsley piert (*A. arvensis*) — an unfortunate name since the plant is obviously not related to the parsleys (UMBELLIFERAE, Dicot.). The generic name is from the Arabic *alkemelych*, for members of the genus were the alchemists' plants, who collected from them the dew with which to perform their experiments. A more robust and typical member is the lady's mantle which begins blooming in June (p. 330); in fact, parsley piert is sometimes called field lady's mantle, for it flourishes on arable land, as indicated by the specific name which is from the Latin *arvum*, cultivated or arable land.

Parsley piert blooms during May to August, being a small procumbent annual herb growing two to eight inches high. The downy leaves are wedge-shaped and divided into three deeply notched lobes, and at the axils they each bear a pair of large, notched stipules which almost hide the small flowers that grow in sessile tufts.

Each flower is greenish streaked with yellow. There are four sepals joined to form a tight tube and then spreading out in salver fashion. There are no petals. Then there are four stamens and one or two carpels enclosed in the calyx tube. The fruit is a corresponding number of achenes enclosed in a dry receptacle.

A member of the true parsley family (UMBELLIFERAE, Dicot., p. 165) does present its compound umbels of white flowers during May and June, and that is sweet Cicely; but it is not very common, being confined mainly to the hilly North. It is a perennial growing two to three feet high, in many respects resembling beaked parsley (p. 167), though it is not of the same genus. Sweet Cicely is a member of the genus *Myrrhis* (*M. odorata*), the generic name coming from the Greek *myrra*, fragrant. But the fruit is very long, sometimes up to an inch and a quarter, and it is strongly ribbed; this organ is particularly aromatic.

The rare ground pine or yellow bugle (*Ajuga chamaepitys*) of the family LABIATAE, Dicot., p. 158, occurs in a few places, mainly in the south-east of England. It is much smaller than the common bugle (p. 214), growing three to six inches high and having yellow flowers. The

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specific name is from the Greek *chamai*, on the ground, and *pitys*, a pine; this and the common name just describe the plant's habit, for it looks like a dwarf pine, as the leaves, borne in pairs, are deeply cleft into needle-like lobes. The small, yellow, red-spotted axillary flowers, similar in structure to those of bugle, are solitary and appear during May to September (Plate 9).

We have already met OROBANCHACEAE, Dicot., a family of plant parasites, through its representative the toothwort (p. 168). This cumbersome plant is one of two members of the genus *Lathraea* indigenous to Britain. The other British genus in the family is *Orobanche*, and this has several representatives, all of which are broomrapes. The generic name is from the Greek *orobos*, a vetch, and *angcho*, to strangle, though none is parasitic on vetches, but one, the greater broomrape (p. 258), uses members of the same family, namely furze and broom, as its host.

Detailed consideration of the genus *Orobanche* will be deferred until the greater broomrape is discovered (p. 258); meanwhile the clove or clove-scented broomrape (*O. caryophyllacea*) may now be found in pastures and on downs (mainly in the south-east of England), growing parasitically on lady's bedstraw (*Galium verum*). Though the perennial parasite is now in bloom and will continue until July, it is not likely that its host will present its first blossoms before June (p. 334). The almost colourless stems of the parasite bear leaves reduced to yellowish-white scales. Its



GROUND PINE OR YELLOW BUGLE

Harold Bastin

suckers penetrate the roots of the host plant. The shoot grows six to twelve inches high. The inflorescence is less dense than that of the greater broomrape. The reddish-brown flowers are similar to those of the greater broomrape, though the upper corolla lip is two-lobed and the three parts of the lower lip are more or less equal.

Monocotyledons have a beautiful representative blooming in the field during May in the early purple orchis, one of the most common of British orchids. It belongs, of course, to the family ORCHIDACEAE, Monocot. (p. 209). It also lives in open woods where it infiltrates into the carpels of bluebells just as often as it appears among the smaller but stockier bluebells which sometimes invade the meadows.

Dark bluebells drench'd with dew's of summer eves,
And purple orchises with spotted leaves.

The Scholar Gipsy: MATTHEW ARNOLD

The early purple orchis blooms during May and June. Indeed it is sometimes found blooming during April, for it is one of the earliest flowering of our indigenous orchids. It is a member of the genus *Orchis* (from the Greek for a tuber, for many members have pronounced root tubers), and has been designated *O. mascula* (from the Latin *masculus*, male — an obscure origin).

This orchis is a perennial growing from one to two feet high, and it perennates by means of conspicuous root tubers which inspired the Old English name of dead men's fingers.

long purples

That liberal shepherds give a grosser name,
But our cold maids do dead men's fingers call them.

Hamlet, Act IV, Sc. 7: SHAKESPEARE



Harold Martin

EARLY PURPLE ORCHIS

The long, oval, but pointed leaves with parallel veins are blotched with conspicuous brown patches.

The fairly large purple flowers are borne in erect spikes. The structure of the flower conforms fundamentally to the description given on p. 209; but the outer perianth segments are reflected upwards. The labellum is three-lobed and has a long spur (Plate 6).



FRITILLARIES

F. A. Girding

Last, but not least, of our May flowers which appear in some pastures are the lovely fritillaries. They also are Monocotyledons. Alas! the flowering season for these handsome flowers is all too short and soon ends in June. Also they are very local in distribution, being confined mainly to certain damp meadows in southern England, mainly around Oxford and Cambridge, and in the Loddon and Thames Valleys.

I know the wood which hides the
daffodil,
I know the Fyfield tree,
I know what white, what purple
fritillaries
The grassy harvest of the river-
fields,
Above by Ensham, down by
Sandford yields,
And what sedged brooks are
Thames's tributaries;

Thyrsis: MATTHEW ARNOLD

The fritillary is a member of the lily family (LILIACEAE, Monocot., p. 205). It is the only indigenous member of the large genus *Fritillaria* (*F. meleagris*); but a very similar though more showy relative, the crown imperial (*F. imperialis*), is popular with gardeners. There are white fritillaries and there are others purple with checkered markings. This is reflected in the generic name which is derived from the Latin *fritillus*, a dice-box. The specific name also describes the same character, for it is from the Greek for speckled. Again the character is indicated in the alternative common name, snake's head. The white specimen is just a variety of the purple.

The fritillary is a perennial growing five to fifteen inches high. It perennates by means of a bulb (common in this family). The leaves are large, somewhat broader than those of the bluebell, and some are borne on the flower stalks.

The flowers are large and solitary, like tulips drooping pensively. There are six perianth segments, purple but tessellated (except in the white varieties), six stamens, and a three-chambered ovary surmounted by a style having three stigmas.



28

MAY

OTHER FLOWERS WHICH MAY APPEAR IN FIELDS AND MEADOWS DURING MAY

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WAYSIDES, WASTE PLACES AND CULTIVATED GROUND

WAYSIDES

AMONG the many plants now in flower along waysides during May, two more members of the parsley family (UMBELLIFERAE, Dicot., p. 165) make their appearance for the first time this year. They are common beaked parsley and chervil (not to be confused with rough chervil, p. 317). Both these umbellifers belong to the same genus (*Anthriscus*) as the wild beaked parsley or keck which is already in bloom in hedgerows (p. 167). Common beaked parsley is *A. scandix* (probably from the Greek *xaino*, to comb) and chervil is *A. cerefolium* (from the Latin *cera*, wax, and *folium*, leaf, for the leaves have a waxy appearance). Both bloom from May to July.

Common beaked parsley is a biennial, growing six inches to three feet high, and chervil an annual, growing one to one and a half feet high, so both differ from each other and again each differs from the more robust wild beaked parsley which is a perennial attaining a height of one to four feet. Other points of difference are: though the lower parts of the stem of the wild beaked parsley are hairy, those of the other two umbellifers

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are entirely smooth; there are only three bracts in chervil and its umbels are borne laterally only, that is, there are no terminal umbels. Chervil is not very common; in fact, it may be a garden escape, for it is sometimes cultivated in herb gardens. In a few localities it is known as Honiton lace.

WASTE PLACES

Both common beaked parsley (*Anthriscus scandix*) and chervil (*A. cerefolium*) sometimes grow in waste places as also does another member of the family UMBELLIFERAE, Dicot., namely, alexanders, but this is to be found more especially near old ruins and in coastal areas. Alexanders belongs to a different genus, namely, *Smyrniium* (from the Greek *smyrna*, myrrh, since the plant has this taste). It is the only British representative of this small genus and is called *S. olusatrum*. The specific name is from the Latin *olus* (or *holus*), a culinary vegetable, and *ater*, black, for at one time it was eaten as we eat celery (*Apium graveolens*) — also an umbellifer. Furthermore at times it was boiled. Its seeds are black.

Alexanders is a robust biennial growing three to four feet high, displaying large umbels of greenish-yellow flowers during May and June. The leaves are not like those of the umbellifers so far met. They are very stout and by no means graceful. The radical and lower cauline leaves are made up of two or three leaflets, each of which is subdivided into three oval, pointed, serrated sub-leaflets. The upper leaves are just divided into three oval, serrated leaflets. All leaves have bulky, sheathing bases.

Two members of the mint family (LABIATAE, Dicot., p. 158) which favour waste places begin blooming in May. One is the henbit dead-nettle which prefers dry, sandy places; the other is wild sage or clary, which grows in gravelly habitats, but the latter is rare.

The henbit deadnettle (*Lamium amplexicaule*) is a close relative of the white, red and yellow deadnettles (pp. 179, 213, 222). It is an annual growing four to twelve inches high. The small leaves are more or less round with large rounded divisions on their margins. They are borne in pairs, and those on the lower parts of the stems have long stalks, whereas those higher up, which subtend the tufts of flowers, are scarcely stalked — in fact the lower parts of their blades tend to encircle the stem on which they are borne. (The specific name is from the Latin *amplecto*, to encircle, and *caulis*, stem.)

The purple flower, appearing from May to September, is typically labiate in structure. The corolla tube is quite hairless and the lower lip is shaped like an inverted heart with two lateral teeth. Those flowers which are borne either very early or very late frequently become self-fertilised without opening.

That rare labiate, the aromatic wild sage or clary (*Salvia verbenaca*), favours gravelly places, especially those near the sea, and presents its



POLLINATION OF A SAGE FLOWER BY A BEE

long, hairy spikes of purplish-blue flowers during May to August. It, like other members of the genus, has certain medicinal properties, as indicated in the generic name, which is from the Latin *salvo*, to heal.

Now butter with a leaf of sage is good to purge the blood.

Knight of the Burning Pestle: BEAUMONT AND FLETCHER

The wild sage is related to, though not the same as, the garden herb, *S. officinalis*.

Wild sage is a perennial, growing one to two and a half feet high, with oblong, pointed, irregularly serrated and wrinkled leaves borne in pairs but having no stalks and thus more or less encircling the stems.

The sage flower has an unusual but very efficient means of ensuring cross-pollination. There are two stamens which ripen before the stigma. Each filament is T-shaped. There is only one anther-head to each stamen and it is at the end of the upper branch of the T. The style is long and reaches out over the stamens, so it is not in the way of the visiting insect. When the bee alights on the lower lip of the corolla and forces its head into the tube to get at the nectar at the base, it pushes itself against the lower branch of the T-shaped stamen, which then acts as a lever, with the result that the upper branch (by now, bearing exposed pollen) is forced over on to the back of the bee. There the pollen is shed. All this time, the style is well above the bee and is therefore not touched by the insect. This does not matter for the time being, for in any event the stigma is not yet ripe; but once the pollen has been shed the stamens wither and the stigma ripens. Then the style bends downwards and in doing so brings the stigma into direct line with the back of the next bee that comes along. It thus brushes the back of the bee and picks up any pollen grains that may be there.

A cordial known as clary water was once made from wild sage flowers mixed with brandy and cinnamon. The wild progenitor of the blue ornamental garden salvia (*S. pratensis*) is rare indeed; but it does sometimes occur in grassy places, blooming usually from June until August.

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CULTIVATED GROUND

In cornfields and other cultivated ground the enchanting heartsease or wild pansy is lifting its perky face to the May sun. It has a long flowering season for its blooms continue to appear until about September. Though heartsease is frequently abundant in cornfields (especially around the borders) and on other ploughed land, it sometimes also appears in pastures and on waste land (*Plate 9*).

Heartsease belongs to the violet family (VIOLACEAE, Dicot., p. 90); in fact, it is fundamentally constructed like a violet (p. 90), so it is included in the same genus *Viola* — the only genus of the family indigenous to Britain.

The most common heartsease is *V. tricolor*. The two upper petals are purple and the two lateral and the lower petals are yellow, the lower petal being conspicuously veined, these veins acting as honey-guides. There are other varieties of this species, and also a few other separate species (see p. 247).

Though fundamentally like the violet flower, the heartsease flower is flatter, so that the two upper petals stand erect instead of growing forward. The fruits are similar (p. 32). The plant bears no cleistogamous flowers, but they would scarcely be necessary, for it blooms during those months when there are plenty of bees about.



Harold Bastin

HEARTSEASE

Vegetatively, heartsease differs strikingly from the violet. It is usually an annual, growing four to twelve inches high. Sometimes it is perennial by virtue of its root-stock. The leaves are very deeply lobed with wavy margins, and each has two stipules which are cut into almost linear segments.

The origins of the two common names of this plant, which has inspired countless poets and other writers, are in doubt. The term heartsease might suggest medicinal virtues, though no one is sure of this.

Heart's ease or pansy, pleasure or
thought,
Which would the picture give us of
these?
Surely the heart that conceived it
sought

Heart's ease.

The Flower Piece of Fantin: SWINBURNE

MAY

For centuries, the pansy has been the emblem of thoughts.

There's rosemary, that's for remembrance; pray, love, remember: and there is pansies, that's for thoughts.—*Hamlet*, Act IV, Sc. 5: SHAKESPEARE

It seems probable therefore that the name comes from the French *pensée*, though Johnson suggested that the name was derived from 'pansy' which in turn came from 'panacea' — a cure of all ills. But Johnson's explanation seems to be a figment of his imagination, for it has no etymological support.

Herrick, who in *Hesperides* told us how the blue violet came by its colour (p. 154), also gave his idea of the origin of heartsease.

Frolic virgins once these were,
Over-loving, living here;
Being here their ends denied,
Ran for sweethearts mad and died.
Love, in pity of their tears,
And their loss in blooming years,
For their restless here-spent hours,
Gave them heart's-case turned to flowers.

Hesperides: HERRICK

Heartsease is also the poet's love-in-idleness.

Some give it foolish names, as Love in idleness,
Call me to you, and three faces in a hood.

Paradisus: PARKINSON

Heartsease yielded up its juice to jealous Oberon that he might cause Titania to fall in love with some 'vile thing' — none other than stupid Bottom the weaver. Oberon knew the flower when it was white and he told Puck how it got its colour.

That very time I saw, but thou couldst not,
Flying between the cold moon and the earth,
Cupid all arm'd: a certain aim he took
At a fair vestal throned by the west,
And loosed his love-shaft smartly from his bow,
As it should pierce a hundred thousand hearts;
But I might see young Cupid's fiery shaft
Quench'd in the chaste beams of the watery moon,
And the imperial votaress passed on,
In maiden meditation, fancy-free.
Yet mark'd I where the bolt of Cupid fell:
It fell upon a little western flower,
Before milk-white, now purple with love's wound,
And maidens call it love-in-idleness.

A Midsummer-Night's Dream, Act II, Sc. 1: SHAKESPEARE

Though *Viola tricolor* is the most common heartsease, there are a few much less common varieties of it. There are also some other species, but

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these are rare. *V. lutea*, for example, is confined to mountain pastures. Its flowers are yellow (the specific name comes from the Latin *lutea*, yellow), though sometimes just a small patch of purple might appear. This species does not bloom until June to August. Then there is the even rarer *V. nana*, a dwarf yellow-and-blue species confined to the dunes of the Channel Islands. Its specific name is from the Latin *nanus*, dwarf.

Two species of buttercup (p. 229), members of the RANUNCULACEAE, Dicot., namely, the small-flowered buttercup (*R. parviflorus*, from the Latin *parvus*, small or few) and the corn buttercup (*R. arvensis*, from the Latin *arvum*, arable land), flourish in cornfields and sometimes also on dry banks. Both bloom during May until June or July and both are annuals, the small-flowered buttercup attaining a height of three to twelve inches and the corn buttercup six to eighteen inches. The fruits (achenes) of the two species are diagnostic: those of the former being covered with hooked tubercles, and those of the latter with hooked spines. The corn buttercup is the most bitter of all buttercups. The small-flowered species does not occur in Scotland.

Penny-cress, one of the CRUCIFERAE, Dicot., p. 95, grows on cultivated ground and presents its small white flowers during May to July. It is sometimes also known as mithridate mustard, since it was considered a proof against poison when the antidote was taken in gradually increasing doses. It is edible. It belongs to the genus *Thlaspi*, a fairly large genus having three British representatives, though the other two are rare. The generic name is derived from the Greek *thlao*, to flatten, for the fruits are very flattened. Penny-cress is *T. arvensis*, an annual growing six to eighteen inches high. It is fundamentally like the shepherd's purse (p. 97), though its leaves are arrow-shaped with wavy margins and sessile, the lower projections of the blade encircling the stem. The flowers are white; the fruits almost circular.

The third of the scorpion grasses (*Myosotis*) now appears in bloom in cultivated ground and sometimes also in woods. This is the field scorpion grass (*M. arvensis*), of the family BORAGINACEAE, Dicot. (p. 272), an annual blooming during May to September. The first two of the scorpion grasses, the early and the parti-coloured, are mentioned on p. 174, where the generic and common names are explained. Like these, the field scorpion grass is closely related to the forget-me-not (p. 389), so detailed consideration of the genus will be left until the loveliest of all the scorpion grasses presents its blooms.

The field scorpion grass is fairly robust, growing six to eighteen inches high. The entire plant is covered with spreading bristles. Its rather small, insignificant flowers are slightly deeper blue than those of the forget-me-not.

One of the gromwells, the corn gromwell, another member of the family BORAGINACEAE, Dicot., also appears during May to July flourishing in cornfields; in fact, in some places, especially in America, it flourishes so well that it is a troublesome weed (there it is sometimes called wheat thief). It is closely related to the common gromwell (p. 420).

The gromwells belong to the genus *Lithospermum*, a fairly large genus confined to temperate areas, but represented only by the gromwells in Britain (one of which, the blue gromwell, is very rare). The corn gromwell, sometimes also called bastard alkanet, is *L. arvense*. The fruits of the gromwells are very hard, stony nutlets; in fact, the common name gromwell is from Middle English *gromel*, seed of grape, and the generic name is from the Greek *lithos*, a stone, and *sperma*, a seed.

Unlike the other two gromwells which are perennial, the corn gromwell is annual. It grows one to two feet high. Its general habit is similar to that of the common gromwell (p. 420), though its flowers are a purer white and the corolla is quite smooth, having no scales.

In plantations, the lungwort, yet another member of the family BORAGINACEAE, Dicot., may be found; but it is far from common. It belongs to the small genus *Pulmonaria* (*P. officinalis*), and, as its specific name implies, it was at one time officinal, being used for the treatment of lung diseases (the generic name is from the Latin *pulmoneus*, pertaining to the lungs).

Lungwort is a perennial, growing twelve to eighteen inches high and having fairly large, simple, sessile, lance-shaped leaves which are curiously spotted with a paler green. It blooms during June and July.

The pale purple flowers are grouped in terminal cymes. Each has a five-toothed calyx formed by five joined sepals; a corolla of five petals joined to form a tube, which at its open end presents a five-lobed salver; five stamens alternating with five groups of hairs; and an ovary of four fused carpels with one long style.

OTHER FLOWERS WHICH MAY APPEAR IN WAYSIDES, WASTE PLACES OR CULTIVATED GROUND DURING MAY

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MOUNTAIN, MOORLAND AND HEATH

MOUNTAIN, moorland, heath and common — those more exposed sites in Nature's garden — are now beginning sensibly to respond to the advance of summer's warmth, and so drab bleakness is replaced by colourful beauty, though, alas, only for a short season.

MOUNTAINS

The moss campion or dwarf catchfly grows almost exclusively in mountainous areas, so it cannot be said to be common in Britain. In fact, it is confined to the highest of our mountains (in Ireland, it may be found only in Donegal) where in parts it grows in dense patches bestowing a purple relief to the otherwise drab scene during the months of May to August. It is of low, dense, matty habit and bears its purple flowers in profusion.

Though it is related to the ragged robin (p. 186) and the red campion (p. 223) (*Lychnis* genus), being a member of the same family, CARYOPHYLLACEAE, Dicot.), it is even more closely related to that group of campions and catchflies, such as the bladder campion (p. 334), which have been placed in another genus, namely, *Silene*, a large north-temperate genus represented in Britain by about seven species. The origin of the generic name is obscure; it may be after *Seilenos*, a Greek god, or *selene*, the moon, or *sialon*, saliva (for some species exude a sticky substance). The moss campion is *S. acaulis*, from the Latin *a* (negative) and *caulis*, stem, that is, apparently stemless. Most campions belonging to the genus *Silene* have the alternative name of catchfly because each is specially adapted to certain insects; this, the dwarf catchfly, for example, is specially adapted to butterflies. The catchflies are not insectivorous; that is, they do not prey on insects as some plants do.

The characteristic features of this procumbent perennial are to be seen in its vegetative habit. The prostrate stem is covered with small

moss-like leaves and the flowers are borne singly on stems one to three inches high. The flower resembles that of the bladder campion (p. 334) in fundamentals, though in this case it is purple instead of white; but sometimes white moss campion flowers appear on the scene. The petals are only slightly notched and the calyx is not so inflated as that of the bladder campion. There are only three styles as opposed to the five large styles in the *Lychnis* group.

MOORLANDS AND HEATHS

Gorse (p. 94) is still in bloom on moorlands and heaths, but not in comparative profusion. A fairly close relative of this lovely plant, namely the broom, is, however, now blazing in bloom and will thus continue — a mass of yellow — for about six to eight weeks (*Plate 7*).

Broom is another representative of the pea family (LEGUMINOSAE, Dicot.), and though its flowers are yellow and very similar in structure to those of gorse, it differs vegetatively in spite of the fact that both broom and gorse are shrubs. Broom has been assigned to the genus *Cytisus*, a very important European genus, of which this is the only indigenous representative in Britain, though certain shrubby and arboreal members of the genus are common enough in gardens and parks. Broom is *C. scoparius*, the generic name being derived from the Greek *kytisos*, trefoil, for the lower leaves are trifoliate, and the specific name from the Latin *scopae*, a broom made of twigs. Broom produces its branches densely, thus resembling a besom. The common name has, of course, the same origin.

I flame, I expire,
I am Beauty's plumage, my wings are a fire;
For a boon, neither buying nor sold,
I scatter my gold. . . .
Your chaffer I flout,
Your marts and your pricings, your wisdom I scout.
But oh, the mad joy as I burn myself out.

Wild Broom: EDWARD THOMPSON

Unlike the gorse, broom is not spiny. The leaves are small, the lower ones being trifoliate, the upper ones simple. The flower is very like that of gorse (p. 95), though larger. The calyx is two-lipped. Though the flower contains no honey, bees visit it for its pollen. After such a visit, the petals remain apart thus exposing the style and stamens which soon wither; this signifies to the next potential visitor that the latter's time would be wasted.

The pod is black or reddish-brown and during July when it is ripe it splits suddenly with a distinct 'pop'.

When the pods went pop on the broom, green broom.

The Runnable Stag: J. DAVIDSON

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Broom has a royal history in the arts of medicine and cookery. King Henry VIII drank water distilled from broom flowers, as well he might for it was considered to be an antidote to the after-effects of over-eating and over-drinking. Broom also figured much in culinary art during Plantagenet and other times. It was also the 'planta genista' worn as an emblem by the House of Anjou, hence the name Plantagenet; but though both broom and gorse were then identified as 'genista', this is now a generic name for other members of the family (see below). St. Louis, the patron saint of cooks, instituted an order of chivalry in honour of broom. The plant was also looked upon as being an emblem of humility.

Another shrubby plant similar to gorse, and therefore, of course, belonging to the same family (LEGUMINOSAE, Dicot., p. 95), is the needle or petty whin, sometimes also called the needle furze or petty green weed. This also grows on heaths, attaining a height of one to two feet and presenting its yellow, gorse-like flowers during May to July. But in vegetative habit it is quite different from either gorse or broom; in fact, it belongs to the genus, namely, *Genista* — a large genus native to Europe, North Africa and western Asia, but represented indigenously in Britain by only three species (see also p. 436). The generic name may be derived from the Celtic *gen*, a shrub, though the Latin for this shrub is *genista* or *genesta*. It was not the original of 'planta genista' (Plantagenet, see above). The needle whin is *G. anglica*.

The plant is only slightly spiny and its small leaves are simple, long and oval. The flowers are solitary but in close formation near the ends of branches.

Some of those heath plants which eventually bear edible fruits are now beginning to bloom, and among these are the wild raspberry which grows in other bushy places as well as the more shrubby parts of heaths. It is the progenitor of cultivated raspberries. It is a member of the rose family (ROSACEAE, Dicot., p. 302) and a close relative of the blackberry or bramble (p. 424), in fact, a member of the same genus, *Rubus* (from the Latin for bramble), so detailed consideration of this plant is unnecessary. Raspberry is *R. idaeus* (from the Latin for native of Mount Ida in Crete, for the plant probably originated there).

The raspberry is a shrub growing two to five feet high and blooming during May to August. The fruits appear during August and for some time onwards. The entire plant is more graceful than the blackberry, the leaves sometimes having two pairs of lateral leaflets instead of the usual single pair in bramble. The leaflets are very downy on their under-surfaces. In one respect, raspberry differs from the blackberry, for the latter spreads vegetatively by means of stolons (p. 15), whereas the raspberry spreads by means of stem suckers — long stems which creep along under the ground and then emerge erect to produce aerial shoots sometimes

several yards from the parent plant. In this respect the plant can be a nuisance, as many gardeners must know. The flowers are always white, whereas those of blackberry are frequently pink, and the fruits — a collection of drupelets, red, or more rarely yellow in colour — are borne on a more conical receptacle.

Of the popular bilberries, cranberries and cowberries whose fruit will be available on heaths and moorland later on in the year, (p. 579), the first-named is now blooming. All three of these plants belong to the small family VACCINIACEAE, Dicot., a family so close to the heather family (ERICACEAE) that some Floras include the two families under the heading of the latter. It is also of interest that members of both families often share the same habitat.

The bilberry, blaeberry, whinberry or whortleberry (whorts for short) belongs to the genus *Vaccinium*, the only genus in the family indigenous to Britain. The generic name is a corruption of the Latin *baccinum*, a diminutive of *baca* (*bacca*), berry. Bilberry is *V. myrtillus* (a diminutive of the Latin *myrtus*, myrtle).

Bilberry is a shrubby plant growing six inches to two feet high, and displaying its small rose-coloured flowers during May and June, though it sometimes begins to bloom even earlier. The small, oval, slightly toothed leaves are deciduous, whereas those of cranberry (p. 482) and cowberry (p. 373) are evergreen. The flowers are borne in the axils of the leaves and are fundamentally like those of heather (p. 478). There are four sepals joined to form a cup below which there are four tiny bracts; four petals joined to form an almost spherical rose-coloured globe having four teeth at its open end; four stamens; and four carpels fused to form an ovary with a long style. The fruit is a glaucous blue-black berry (for this reason sometimes called bloom-berry), mentioned on p. 580.

Where fires thou find'st unraked and hearths unswept,
There pinch the maids as blue as bilberry.

The Merry Wives of Windsor, Act V, Sc. 5: SHAKESPEARE

Bilberry has been looked upon as the emblem of treason.

The crowberry or crakeberry which grows in the more stony parts of heaths and moors must not be confused with the cowberry (p. 373), for it is a totally different plant belonging to the family EMPETRACEAE, Dicot. — a family in no way related to VACCINIACEAE. EMPETRACEAE is a small family represented in Britain only by the crowberry, a small shrub growing six to eighteen inches high and presenting its purple flowers during May and June. It is a member of the genus *Empetrum* (*E. nigrum*), the generic name coming from the Greek *en*, upon, and *petros*, rock, for that is where the plant thrives; the specific name is from the Latin *niger*,



BURNET OR SCOTCH ROSE

black, for the fruits, beloved of wild-fowl, are black, rarely plum-coloured, drupes containing several stones.

This rather rare plant has much-branched trailing stems which bear many small, long and pointed leaves. Their margins are curved backwards and the under-sides are protected by hairs so that the stomata are shielded from over-exposure.

The small purple flowers are borne in the axils of those leaves nearer the tips of the branches. The flowers are unisexual, and male and female flowers are borne on different plants. There are three sepals and three petals in both sexes of flower. The male has three very large stamens. In the female the number of carpels varies, but there is a sturdy style with pronounced stigmas.

The crowberries on Cheviot
Were rare and hard to find ;
And bitter were they on the tongue ;
And yet, love, to my mind,
Because we sought for them together
In the still gold October weather,
No fruit of the Hesperides
Could vie with those harsh crowberries.

The Crowberries : WILFRID GIBSON

The burnet or Scotch rose is the first of our wild roses to break into flower, for it does so during May and continues over a fairly short season of about seven weeks. This is, of course, a member of the ROSACEAE, Dicot. (p. 302), and belongs to one of the very well-known genera, namely, *Rosa* (p. 302). Burnet rose is *R. spinosissima*, for stems and leaf-stalks

bristle with small, packed prickles. This rose may be found on heaths and sometimes also on sand dunes. It is a small shrub growing six inches to two feet high. In fundamental structure it is like the wild rose. The leaves are smaller however. The very fragrant flowers are cream in colour, though on rare occasions pink specimens occur. The almost spherical receptacles which enclose the fruit are large and black, on which the remains of the sepals are pronounced.

Herbaceous members of the pea family (LEGUMINOSAE, Dicot., p. 95) are represented on heaths and other dry places by the beautiful procumbent bird's foot (not to be confused with the bird's-foot trefoil, p. 437), the only common member of the genus *Ornithopus*, a genus of plants at home mainly in Mediterranean areas, western Asia, tropical Africa and tropical Brazil. The fruit takes the form of three or more unusually jointed legumes resembling a bird's foot, and this is indicated in the generic name, which is derived from the Greek *ornis*, bird, and *pous*, foot. Bird's foot itself is *O. perpusillus*, from the Latin meaning very small, for that the plant certainly is. It is a prostrate annual attaining a height of four to eighteen inches, blooming from May to September.

The downy leaves are divided into six to twelve lanceolate leaflets, but there are no terminal tendrils as there are in most *Vicia* vetches, which this plant somewhat resembles. The papilionaceous flowers are small and they are borne in dense heads. Each is cream and veined with crimson.

The stork's bills—close relatives of the crane's bills (p. 177)—and therefore also members of the family GERANIACEAE, Dicot. (p. 177)—are included in the genus *Erodium* (from the Greek *erodios*, heron)—a genus which differs from the crane's bill genus (*Geranium*) in that five out of the ten stamens are sterile.

The only common stork's bill in Britain is the hemlock stork's bill (*E. cicutarium*), though there are others. This example flourishes on sandy heaths and waste places, especially near the sea, and blooms during May to August. Its specific name is from the Latin *cicuta*, hemlock.

It is a biennial growing three to eighteen inches high. The leaf is



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FRUITS OF BIRD'S FOOT

THE FLORAL YEAR

compound, having five to seven pairs of lateral leaflets and a terminal one, and all leaflets are deeply but irregularly notched. The lilac (though sometimes, but rarely, white) flowers, which are very variable in size, are borne in umbels (few to each umbel) at the ends of long axillary stalks. Apart from the five sterile stamens, the floral structure is similar to that of the dove's-foot crane's bill (p. 177) and other members of the GERANIACEAE.

The beak of the fruit is larger than those of the crane's bills. There is another point of interest too. That part of the beak ejected with each seed is hairy and hygroscopic. When dry it is twisted spirally; but as it absorbs moisture it straightens out and this forces the seed into the soil. So this plant has a mechanism which not only disperses but also sows its seeds.

The lesser or heath stitchwort grows on heaths, and blooms during May to August; but it is not so common as its larger relative the greater stitchwort (*Stellaria holostea*, p. 157). The stitchworts are members of the pink family (CARYOPHYLLACEAE, Dicot., p. 99). The lesser is *Stellaria graminea*. Though in general habit less robust than the greater stitchwort, the lesser grows to a height of one to two feet, and is therefore sometimes taller than its greater counterpart. It is perennial. The specific name is



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HEMLOCK STORK'S BILL

derived from the Latin *gramen*, grass, for it is of grassy habit, especially in the case of its leaves. The flowers are white, but comparatively small.

The common speedwell (*Veronica officinalis*) grows in heathy places and on dry banks, displaying its small, pale-blue flowers during May to July. It is a member of the genus *Veronica* to which all speedwells belong; this genus is included in the family SCROPHULARIACEAE, Dicot. (p. 226). Like the field (p. 180) and wall (p. 183) speedwells, the common speedwell closely resembles germander speedwell (p. 227) in fundamental floral structure.

The common speedwell is a creeping perennial, growing two to ten inches high with a perennating root and hairy stems. The leaves, borne in opposite



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EYEBRIGHT

pairs, are oval but narrow at the base and serrated on the margins of the broader part. The small, pale-blue flowers are borne in long, axillary, dense racemes. The astringent and bitter leaves have been used in the past for making a form of tea.



EYEBRIGHT

Bottom right, flower in section

In the same family (SCROPHULARIACEAE, Dicot.) are quite a number of semi-parasitic herbs, one of which, the heath lousewort (*Pedicularis sylvatica*, p. 175), is already in flower. Others bloom later, but during May another, namely the eyebright, is opening up its long flowering season (May to September) in heathy places (Plate 9).

Eyebright is a member of the genus *Euphrasia* (*E. officinalis*), a large genus of



Ernest G. Neal

GREATER BROOMRAPE

is semi-parasitic on the roots of grasses. The small leaves are borne in opposite pairs. Each leaf is sessile and deeply serrated. The small flowers, borne stalkless in the leaf-axils and so forming a fairly dense spike at the ends of the branches, may be white or they may be lilac veined with purple. The flower is typical of the very irregular members of the SCROPHULARIACEAE. The four sepals are joined to form a four-toothed cup. The five petals are joined into a gaping tube which is two-lipped, the upper lip being two-lobed and the lower three-lobed. The upper lip protects the four stamens and the style, the latter projecting beyond the former so that cross-pollination is ensured. The fruit is a flattened capsule enclosed in a persistent inflated calyx.

We now should meet the most conspicuous of all the broomrapes, namely the greater broomrape (*Orobanche rapum-genistae*, OROBANCHACEAE, Dicot.), a parasite on broom, gorse, etc., and therefore to be found where its

semi-parasites represented in Britain by this species only. The specific name indicates that it is officinal, that is, used in medicine: indeed at one time this was so; the generic name is from the Greek *euphraino*, to gladden, for the plant was used for treating eye complaints, chiefly in the form of infusions used as lotions. This is also reflected in the common name, though the plant is often called euphrasy.

Michael from Adam's eyes the
Filme remov'd
Which that false fruit that promis'd
clearer sight
Had bred; then purg'd with
Euphrasie and Rue
The visual Nerve, for he had
much to see.

Paradise Lost: MILTON

Eyebright is an annual, growing one to twelve inches high. On sheltered sites it forms a fairly large branched shrub; but on exposed downs, especially those near the sea, it is unbranched and insignificant. It



MAY

hosts flourish ; that is, chiefly on heath and moorland. It bears its flowers during May to July. The clove broomrape appears at the same time, but it is parasitic on lady's bedstraw (p. 240). Great broomrape is a perennial, growing one to three feet high. It is a stout fleshy plant, swollen at the base, sending off suckers which penetrate the roots of the host plant. The reddish thick stem bears leaves which are reduced to drab-white scales, and at the top a long dense spike of flowers. The calyx is usually divided into two with a large bract. The corolla is two-lipped, the upper lip being simple and the lower one divided into three spreading lobes. These pinkish petals sometimes have a span of as much as an inch. The fruit is a capsule.

This parasite has astringent properties and in the past it was considered to have medicinal virtues. There is an American species, *O. ludoviciana*, whose white stems were relished as a food by the Pah Ute Indians.

There is a rare milkwort (*Polygala calcarea*, natural order POLYGALACEAE) which need not detain us long, for it differs little from the more common milkwort (p. 339), except that its lower leaves form a rosette and from the axils of some of these the flowering shoots emerge. Furthermore, it blooms much earlier — from May to July. Apart from this the plant is similar to the common milkwort and favours similar habitats, mainly chalk downs and hillsides.

OTHER PLANTS WHICH MAY BE BLOOMING ON MOUNTAINS, MOORLANDS OR HEATHS DURING MAY

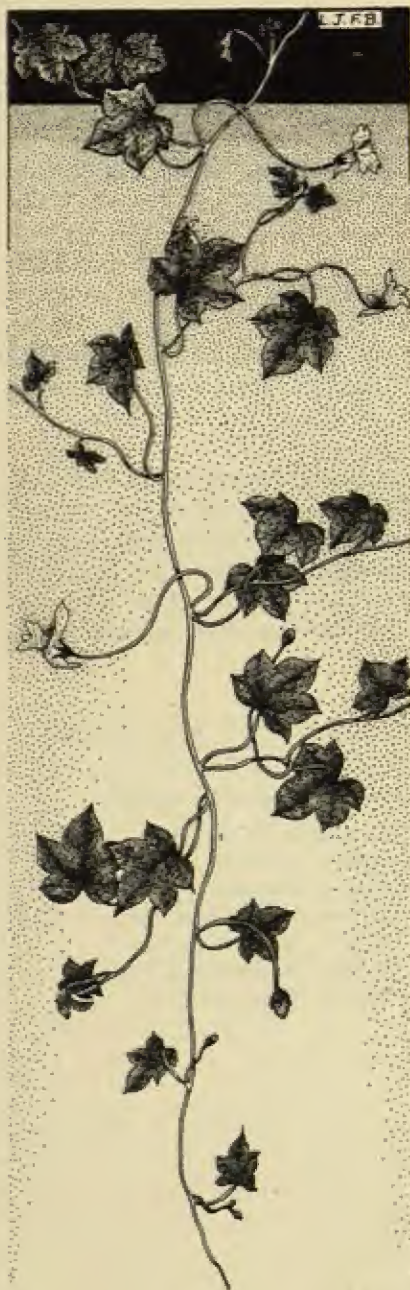
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WALLS

WALLS frequently form the habitats of a variety of plants (both flowering and flowerless) — either clinging herbs or climbing shrubs, and some of these are now beginning to burst into flower. Sometimes a plant



IVY-LEAVED TOADFLAX

Note the shape of the leaves

becomes established on a wall because there happens to be some cranny in it or other place where soil and humus collect; but more often than not in such a case the wall is not the natural habit of the plant. On the other hand there are plants whose general habitat is old walls, and perhaps one of the most common examples in Britain is the ivy-leaved toadflax. This is not a true native of Britain though it has certainly now made itself at home, even in towns. It favours old damp walls, especially those in shaded places. The pretty annual grows in crannies sending out long, thin stems which tumble over the wall producing a most pleasing effect, and when the small lilac flowers are out, that is during May to September, the effect is even more delightful.

There are about ten different toadflaxes, though few favour walls as the ivy-leaved species does. They all belong to the genus *Linaria*, of the natural order SCROPHULARIACEAE, Dicot. (p. 226). Most of them have long, lance-shaped very pointed leaves, like those of the flax, and owing to this fact the generic name is given, from the Latin *linum*, flax (p. 338). This does not apply, however, to ivy-leaved toadflax, for its smooth, long-stalked leaves are five-lobed, like that of ivy, hence the common name. This toadflax is specifically designated *L. cymbalaria*, from the Greek *kymbalon*, cymbal, again referring to the shape of the leaves, though the comparison is not a good one.

The solitary pale-lilac flowers grow on long, thin, graceful stalks. There is a tube of five sepals, toothed at the rim. Then, unlike eyebright, but like snapdragon, the two lips of the corolla

tube are pressed firmly together. At the back of this tube nectar is stored, and on the middle lobe of the lower lip there is a yellow honey-guide. Therefore insects are guided towards the compressed lips, but only the strongest of them, such as bees, are able to prise the lips apart: this is just as well, otherwise smaller insects might plunder the flower of its nectar without compensating by pollinating it.

Ivy-leaved toadflax has an unusual method of sowing its own seeds in suitable ground. The flower stands more or less erect on the long stalk before fertilisation has occurred. Afterwards the stem gradually curves towards any nearby cranny or other site which might be damp. Once brought in contact with the humid atmosphere, the fruit capsule bursts and the seeds are sown.



Harold Bastin

GREATER CELANDINE

An equally intriguing plant which favours old walls (but in this case stony waste places also) is the not very common greater celandine. This plant must not be confused with the lesser celandine (p. 155) nor mistaken as a relative, for the two plants are quite different and in fact belong to different families, the lesser to the buttercup family (RANUNCULACEAE, Dicot.) and the greater to the poppy family (PAPAVERACEAE, Dicot., p. 357), though the two families are not far distant from each other in evolutionary sequence.

The greater celandine is the only member of the genus *Chelidonium* (*C. majus*). The generic name is from the Greek *chelidon*, a swallow, assumed by some to have been imposed on this flower because it comes and goes with the swallow. A further suggestion is given on p. 262.

The greater celandine is a fairly robust herb growing one to two feet high and presenting its yellow flowers during May to August. In fundamental structure it resembles the poppy. The entire plant is smooth. The large sessile leaves are irregularly compound and each leaflet is irregular but deeply indented (Plate 9).

The yellow flowers, smaller than those of the common red poppy, are borne in long-stalked axillary umbels. Each flower is typical of the family,

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having two pale-green sepals, four broadly oval yellow petals, numerous stamens and a single-chambered ovary with a two-lobed stigma.

This plant contains a deep yellow, acrid, poisonous juice mainly in its stems and the veins of its leaves. This juice was once used for dyeing fabrics but was not very successful since it is not a fast dye. It is still a popular remedy for warts and has been used for removing films from the eyes. According to Pliny, the property of removing such films that the juice is supposed to possess was discovered by swallows who used it on their nestlings, hence the generic name (see also p. 261). It is the greater, not the lesser, celandine which is depicted on Wordsworth's monument at Grasmere (p. 155).

The annual pearlwort grows on old walls and in other bare places such as gravelly walks, and it blooms during May to September. It is a member of the pink family (CARYOPHYLLACEAE, Dicot., p. 99) and is included in that genus which contains several different pearlwarts, namely, *Sagina*. Unlike the stitchworts (p. 157), the pearlwarts are all inconspicuous plants, which perhaps explains the generic name from the Latin, for feasting in the ironical sense, since pearlwarts are of no economic value.

The annual pearlwort is *S. apetala*, the specific name indicating that it has no petals — altogether an uninteresting plant. Most of the pearlwarts have typical, stitchwort-like flowers; but not the annual. It grows one to ten inches high.

OTHER HERBS WHICH MAY BE BLOOMING ON WALLS DURING MAY

(The number following each flower is the page on which it is mentioned or described)

Saxifrage, Alternate-leaved, 187	Saxifrage, Three-fingered, 183
Saxifrage, Common, 187	Speedwell, Wall, 183
Saxifrage, Opposite-leaved, 187	Wallflower, 182
Saxifrage, Rue-leaved, 185	Whitlow grass, 135

27

DAMP MEADOWS, DITCHES, MARSHES, STREAMS AND COASTAL AREAS

THE flora of such cooler habitats as damp meadows, ditches, marshes, bogs, banks of streams and rivers, and even the streams and rivers themselves are now responding to the advance of warmer and brighter weather

MAY

and to the longer days; so many more new flowers can be expected in these aquatic and semi-aquatic areas.

DAMP MEADOWS

In damp meadows and muddy places, in ditches and on the edges of ponds the celery-leaved buttercup or crowfoot (*Ranunculus sceleratus*) of the family RANUNCULACEAE, Dicot., is now displaying its small, pale-yellow flowers and will continue to do so until September.

This buttercup is an annual growing six inches to two feet high. The juicy stem is hollow. The smooth, glossy leaves are not very shapely, being divided into three lobes each of which is deeply notched. The flowers are smaller and of a paler yellow than those of the common buttercups though they are fundamentally similar in structure (p. 230). The collection of achenes is unusually elongated.

The impressive salsify rears its purple flower-head in but a very few damp meadows, mainly in the south of England, during May to July. It is not indigenous to Britain; but it is a sturdy plant, all too rare. It is a member of the COMPOSITAE, Dicot. (p. 126), and very closely related to goat's beard (p. 316), in fact, apart from colour it is very like it and therefore is included in the same genus, *Tragopogon* (*T. porrifolius*). The generic name is, in fact, Greek for goat's beard (*tragos*, goat, and



Harold Bastin

CELERY-LEAVED BUTTERCUP

Note the elongated fruiting receptacles

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pogon, beard); the specific name of salsify indicates that its leaves are like those of the leek, being derived from the Latin *porrum*, leek, and *folium*, leaf.

Salsify is a perennial growing one to two feet high. Since it is very like goat's beard (p. 316), detailed description is unnecessary. It differs in that the stalk bearing the flower-head is thicker, the bracts making up the involucre surrounding the floral capitulum (p. 131) are larger and much longer, and the flowers themselves are purple, not yellow.

Sometimes salsify is cultivated, for its flowers are certainly ornamental. In former times it was also treated as a vegetable, and its fleshy roots were either stewed or boiled. Both this plant and goat's beard have been introduced from Europe into the United States and there cultivated. In that country, salsify is also known as purple goat's beard, vegetable oyster and oyster plant, for the boiled roots are supposed to taste like oysters.

All three pearlworts belonging to the genus *Sagina* begin flowering during May. The annual pearlwort (*S. apetala*) grows on walls and other bare places (p. 262); the common procumbent pearlwort (*S. procumbens*) does best in wet places, though it all too often grows as a weed in gardens; and the sea pearlwort (*S. maritima*) is a rare maritime plant (p. 275).

The procumbent pearlwort, unlike the others, is perennial. It is a small, procumbent, long-rooting herb growing one to three inches high.



Harold Bastin

PROCUMBENT PEARLWORT

There is usually a rosette of small, pointed leaves from which emerge the procumbent stems bearing other leaves arranged in opposite pairs. The white flower is very like that of stitchwort, for the pearlworts are also members of the family CARYOPHYLLACEAE, Dicot. (p. 99). Each flower is inconspicuous, for its green sepals are longer than its small petals. The flowers appear over a long season (May to September).

MARSHES

Of the grasses (GRAMINEAE, Monocot., p. 170), the genus *Glyceria* (from the Greek *glykeros*, sweet) comprises species which flourish in fresh- or salt-water marshes. The reed meadow

grass (*G. aquatica*) is now in bloom and will continue to bear its insignificant flowers until August. It favours fresh-water marshes and the banks of streams and is a tall perennial attaining a height of anything from three to six feet. It bears erect much-branched panicles of flowers, six to twelve inches long. The leaves are one to two feet long and half an inch across at the widest part.

The yellow winter cress or yellow rocket favours marshes or very damp grassy ground and it displays its small yellow flowers from May until July or August. It is a member of the family CRUCIFERAE, Dicot. (p. 95), and is included in the genus *Barbarea*, named after Santa Barbara of Nicomedia (c. A.D. 300). The yellow winter cress is *B. vulgaris* — a biennial growing one to two feet high. It has very dark-green leaves which are borne on angular stems. Each leaf is really simple yet it is cut so deeply, almost to the mid-rib, as to appear to be made up of three pairs of irregular leaflets and a large terminal one having wavy margins.

The flowers, typically cruciferous in structure, are borne in terminal heads. The fruit is also typical, being a siliqua about an inch long.

There are cultivated double varieties of this plant, usually known as yellow rocket. *Barbarea vulgaris* and other species of the same genus have in the past been used as pot-herbs and sometimes their bitter leaves were boiled together with other 'greens'.

One of the stitchworts (p. 157), namely marsh stitchwort (*Stellaria glauca*), of the family CARYOPHYLLACEAE, Dicot. (p. 99), blooms during May to August. Its leaves are glaucous; that is, they are covered with a blue-grey bloom; so the plant is sometimes known as the glaucous marsh stitchwort; the same characteristic is reflected in the specific name which is from the Greek *glaukos*, blue-grey. It is interesting to note that the cultivated carnation, also of the same family, has similar glaucous leaves.

Marsh stitchwort is a perennial growing one to two feet high and it is very like the lesser stitchwort (*S. graminea*, p. 256), but has somewhat larger white flowers. The petals are deeply notched and are much longer than the three-nerved sepals which support them.

A very curious, atypical, umbellifer (UMBELLIFERAE, Dicot., p. 165), namely, marsh pennywort or common white-rot, flowers in marshes during May to August. It is the only British representative of the genus *Hydrocotyle*, a large genus of tropical and temperate plants. Pennywort is *H. vulgaris*.

It is a creeping perennial, the prostrate stem stealing over the ground giving off roots and shoots at the nodes. The leaves of this plant are easy to distinguish from all other umbellifers, most of which have deeply cut compound leaves, for here they are quite simple yet peltate; that is, the leaf-stalk joins the leaf-blade at the centre of the latter. The blade

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itself is round with wavy divisions at the margins (somewhat like the garden 'nasturtium' leaf). This characteristic shape of the leaf is indicated in the generic name which is derived from the Greek *hydor*, water, and *kotyle*, cup.

The small, greenish-white flowers are borne in simple umbels, each containing about five flowers and borne on simple stalks arising from the nodes of the creeping stem. Each flower has a calyx tube formed from five fused sepals, five greenish-white, pointed petals, five stamens and an ovary formed from two joined carpels with two separate styles.

A close relative of the heath lousewort (*Pedicularis sylvatica*, p. 175), of the family SCROPHULARIACEAE, Dicot., thrives on marshy ground and blooms from May until September. This is the marsh lousewort or marsh red-rattle (*P. palustris*, from the Latin *palus*, swamp). Both these louseworts are similar, though the heath lousewort is a procumbent perennial, whereas the marsh lousewort is an erect annual growing six to eighteen inches high, its stems being of a purplish hue. Furthermore, the flowers are deeper red in colour, and the calyx tube is hairy instead of smooth and has two serrated lobes instead of five as in the heath lousewort.

Both louseworts are semi-parasitic on the roots of grasses and those of other hosts.

BOGS

In bogs, which tend to be more acid than marshes, yet another stitchwort (p. 157) may be found blooming during May to July. This is the bog stitchwort (*Stellaria uliginosa*, CARYOPHYLLACEAE, Dicot.). The specific name refers to the plant's preference for a damp habitat, from the Latin *uligo*, moisture.

Bog stitchwort is a perennial growing three to eighteen inches high. Its leaves are broader than those of most other stitchworts. The small flowers are insignificant, for the green sepals are longer than the white petals.

The first member of the family GENTIANACEAE, Dicot., now appears in flower. The GENTIANACEAE is a very large family not very widely represented in Britain, but spread over most parts of the globe and represented in all sorts of habitats. Most members are herbaceous, though there are a few shrubs. In Britain the majority are rather late-flowering. The first to appear is the lovely buckbean, bogbean or marsh trefoil which thrives in bogs and presents its flowers during May to July. It is not a very common plant, though it is often encountered in bogs in the Lake District.

Buckbean is the sole representative of the genus *Menyanthes* (*M. trifoliata*). There is some doubt about the origin of its generic name, but it is probably from the Greek *men*, month, and *anthos*, flower, referring to

the fact that for centuries it was used for promoting menstrual discharges. The plant is a sturdy perennial growing four to twelve inches high. It perennates and multiplies by means of underground stems. These are usually under that part of the bog which itself is under water.

His finger pointed : and across
the marsh
With menyanthes matted that the
harsh
Spiked whin bush feared to tread,
a mound
With stones encircled. . . .

*Foya the Rebel, a Prehistoric
Romance of Dartmoor :*

NEWMAN HOWARD

As the specific name implies (and also the common name, marsh trefoil — but an unfortunate name since there is no relation between this plant and the leguminous trefoils), the large leaf is divided into three lobes, each of which is oval and pointed and irregularly serrated. The leaf-stalk has a sheathing base.

The pink or white flowers, tinged with red, form terminal inflorescences, six to a dozen flowers being arranged alternately on an erect axis. There are five sepals united to form a five-cleft tube. The five very hairy petals are joined in the form of a funnel which spreads out in campanulate fashion. Five stamens alternate with the corolla lobes and are fused to the inside of the corolla tube. The two carpels are fused to form a single-chambered ovary having a long style surmounted by a two-lobed stigma. Comparison of this flower with that of another of the gentian family (p. 339) will reveal how typical of the family the former is.

Buckbean is bitter and was at one time used for making a kind of tea, and was sometimes also infused into wine. Medicinal virtues have also been ascribed to it ; it was used for treating rheumatism.

I cannot recapture the golden magic of the water-flags,
Nor the warm, brown stillness of the woodland loch,
Nor the loveliness of the buckbean in the sunny water.
They are no more now, than an essence,
An emanation from the lost, enchanted country of childhood.

Glengaber Woods : DOROTHY PAULIN



Harold Bastin

BUCKBEAN

THE FLORAL YEAR

Of the few British insectivorous plants, the common butterwort is the first to bloom. Here we might pause, for so many exaggerated statements have been made about plants which catch and consume animals that it will be worth while to recapitulate what was written of them in *Flowers in Britain*.

Although animals consume plants, either whole or in part, very few plants are so organised that they can consume animals. Normally they only absorb the very much changed products of animals.

Yet there are examples of plants that can prey on living animals. They actually catch the animals, kill them and then digest certain parts of them. It is no wonder, then, that animal-catching plants have stirred the imagination of many people, especially those who have never seen one. Travellers in the past have often propagated such beliefs with startling stories none of which has stood up to the test of investigation. There was a widespread belief, for example, in the existence of the 'man-eating tree' in certain tropical regions which was supposed to trap a man with its long tendrils, then engulf him and digest him.

All the same, there are some animal-trapping plants, though these are all content with very small prey — usually insects, for which reason they are called insectivorous plants. Although not very common, they are naturally of peculiar interest, and some have developed most wonderful mechanisms for capturing their prey. A few of these are British.

It is quite true that these plants consume insects, but not one of them depends completely on insects for its food. In fact, one can go still further and say that insects form a very small part of the diet. All such plants have green leaves and are accordingly able to make their own food from the raw materials. Then why do these plants catch insects? The explanation is that most insectivorous plants inhabit swampy or boggy localities. The plant and animal populations of such habitats are usually sparse, so the water-logged soil is practically devoid of natural manure or humus. And whatever there is present is soon leached out by the acid water. Consequently the nitrogen content is low. Now insects have a high protein content, and proteins contain nitrogen. Therefore, by absorbing them, insectivorous plants supplement their meagre nitrogen supply.

Though insectivorous plants could actually do without such animal food, there is little doubt that the nitrogen obtained from them is valuable. This was aptly phrased by Julius von Sachs, the eminent German botanist, when he remarked: "In Poland and Ireland a great many people live only on potatoes, but it does not follow that a beefsteak wouldn't be a good deal better".

There are only two families of insectivorous plants represented in Britain, namely, LENTIBULARIACEAE, Dicot., and DROSERACEAE, Dicot. (p. 493).

Butterwort belongs to the former family — a fairly small one containing nothing but insectivorous plants. Butterwort thrives in bogs in Britain, especially in the West Country, Yorkshire and on the Scottish moors. It is also widespread throughout Europe and the United States. It is a

member of the genus *Pinguicula* (*P. vulgaris*), the derivation of which is explained below. The plant is a perennial, having rosette leaves, but each flower-stalk attains a height of two to six inches, presenting its single flower from May to July.

The leaves are oval, and their upper surfaces are covered with a pale yellow sticky substance which looks something like butter, hence the common and generic names, from the Latin *pinguis*, oily. An unwary insect alighting on the leaf is caught as if on a fly-paper. Then the margins of the leaf are stimulated to roll over and entrap the insect. On the upper surface of the leaf there are microscopically small glands which secrete digestive juices; these act on the entrapped prey thus making its nitrogen-containing proteins soluble. Then the dissolved substances are absorbed by the leaf. After this, the leaf opens out again and in due course the insect remains are either washed or blown off.

The purple flowers are borne on erect stalks. The five sepals are united. The purple corolla is made up of five petals forming two lips, but joined below and projecting backwards into a spur. There are two stamens and the ovary is single-chambered.

There are a few other, but rarer, butterworts in Britain, for example, the Irish butterwort (*P. grandiflora*), alpine butterwort (*P. alpina*) and western butterwort (*P. lusitanica*).



Ernest G. Neal

COMMON BUTTERWORT

STREAMS, RIVERS, PONDS AND LAKES

Dost thou love pictures? we will fetch thee straight
 Adonis painted by a running brook,
 And Cytherea all in sedges hid,
 Which seem to move and wanton with her breath,
 Even as the waving sedges play with wind.

The Taming of the Shrew, Induction, Sc. 2: SHAKESPEARE

THE FLORAL YEAR

By the edges of streams, rivers, ponds and lakes the sedges have already been evident for some time, for their leaves are by now well developed ; but during May some of them begin to open out their flower buds.

There are many different sedges, all of which belong to the monocotyledonous family CYPERACEAE, Monocot., a family nearly related to the grass and cereal family, GRAMINEAE. CYPERACEAE is a large cosmopolitan family comprising about sixty-five genera which include such plants as sedges, bulrushes and cotton-grasses. Many of them are water-loving plants, though some frequent damp woods and heaths.

Most members of the family spread vegetatively and prolifically by means of underground stems. The grass-like aerial shoot is usually made up of solid stems bearing leaves in three ranks. The base of each leaf is sheathed, but the sheath is not split as it is in the grasses.

The flowers are usually inconspicuous. In some genera they are unisexual though both sexes are usually borne on the same plant. Each flower is somewhat like a grass flower (p. 171) in structure. It is borne in the axil of a glume, and a number of such glumes are inserted on an axis overlapping each other to form what is called a spikelet. In some cases the spikelets grow separately ; in others several together form a spike. The perianth of the flower may be absent altogether or if present it may take the form of three to six segments or merely a tuft of hairs. There are three stamens. The ovary is single-chambered, being formed by the fusion of two or three carpels with the corresponding number of feathery styles, for the flower is wind-pollinated.

There are about fifty different sedges indigenous to Britain, some of which grow along the edges of water, others on heaths and others in woods. There are also many hybrids. So it will be impossible to consider them all. They belong to the genus *Carex*, a genus containing in all about eight hundred species spread over north and south temperate regions. The generic name is from the Greek *keiro*, to cut, for the leaves of some of the species have edges as sharp as razors. The common name sedge is derived from the Anglo-Saxon *secg*, sword.

They have no song, the sedges dry
And still they sing.
It is within my breast they sing,
As I pass by.
Within my breast they touch a string,
They wake a sigh.
There is but sound of sedges dry ;
In me they sing.

Song in the Songless : G. MEREDITH

One of the most familiar of British sedges is the common sedge (*C. acutiformis*, from the Latin *acutus*, sharp), an inhabitant of the margins of streams and some rivers. It is a perennial growing two to three feet high and blooming during May to July. In this case the flowers are unisexual

though both sexes grow on the same plant. The spikelets are sessile and short, and three to five of them make up a spike. The terminal spike is composed of all male flowers; the lateral spikes, of nothing but female flowers. Each female flower has an extra glume called a utricle and bears three feathery styles. All glumes are purplish-brown. The leaves are broad and glaucous.

Among other sedges are the great sedge (*C. riparia*) growing three to five feet high along river margins; the wood sedge (*C. sylvatica*) growing one to three feet high in woods; the glaucous sedge (*C. diversicolor*) growing four inches to two feet high in grassy places;



Harold Bastin

SEDE IN BLOOM

and the small bog sedge (*C. limosa*) growing six to fifteen inches high in bogs. These and many others begin flowering in May or June. But there are many of them and they are not very interesting except to a specialist, so a Flora must be consulted if further details about sedges are required.

The ever-popular brooklime grows in watery places, especially on the banks of streams. It is another of the many species of *Veronica* (*V. beccabunga*) of the family SCROPHULARIACEAE, Dicot., and though more robust it is fundamentally similar to the germander speedwell (p. 227). Its ugly specific name is from the Flemish



Harold Bastin

BROOKLIME

THE FLORAL YEAR

common name for the same plant. It is a perennial, growing one to two feet high and displaying its blue flowers in long axillary racemes during May to September. Being a water-loving plant, its stems are succulent.

Also growing on the banks of streams and just as frequently on river banks is the large, rough-looking comfrey. This is a member of the forget-me-not family (BORAGINACEAE, Dicot.), a widely dispersed family especially in the Mediterranean zone. Reference has already been made to several less-important members of this family. The flowers of all of them are regular.

The common comfrey is a robust perennial growing two to three feet high. It belongs to the genus *Symphytum*, an exclusively European (mainly Mediterranean) genus. The generic name is derived from the Greek *symphyo*, to heal or unite, and this and the specific name of the comfrey (*S. officinale*) indicate that the plant has medicinal virtues. Sometimes its leaves are cooked as 'greens', sometimes medicinal tea is brewed from them. This is not a very wise habit, for there is a superficial, though only superficial, resemblance between this plant and the very poisonous foxglove, and in the past mistakes have been made with unpleasant, on occasions fatal, consequences. At one time comfrey was believed to be good for setting broken bones. This is also indicated in the generic name, and in some of the many local names, of which the following are a few: bone-set, knitbone, knitback, ass ear (from the shapes of the leaves) and blackwort.

The large leaves are lance-shaped and their margins continue some distance down the stems in the form of flanges. The flowers appear during May to July. Like the scorpion grasses of the same family (p. 174), they are borne in scorpioid inflorescences, though the shape is not so obvious here because the flowers are so large. The flowers may be purple, yellow or white, and sometimes one colour changes to another—a



Ernest G. Neal

COMFREY

characteristic not uncommon within this family (p. 389). Each flower is basically typical of the family. There is a five-toothed, hairy calyx tube. The five petals are joined more in the form of a funnel than a salver as in most other species in this family. On the inside of the throat five stamens are inserted, and these alternate with five awn-shaped scales. The ovary is divided into four segments, each of which after fertilisation forms a small nut or nutlet. The nutlets remain surrounded by the persistent calyx.

There is another comfrey, the tuberous comfrey (*S. tuberosum*), which grows in similar but more shaded habitats. It is smaller, growing only one to two feet high and having smaller leaves and less robust stems. Its flowers are yellowish-white. Beneath the soil, stem tubers, similar to those of the potato, are formed.



Harold Bastin

WATER CROWFOOT IN A BROOK

Casting our eyes from the edge of the pond, lake or slowly moving stream or river, we might spot what is probably the most lovely of all the crowfoots (buttercups), namely, the water crowfoot, of the family RANUNCULACEAE, Dicot. (p. 229). Like all other aquatic members of the genus *Ranunculus* (*R. aquatilis*), this plant bears white flowers tinted with yellow, but similar in structure to the common buttercups (p. 230). They show their heads above water during May to August and then, backed by the green floating leaves, they make a most inspiring sight, although they are individually smaller than ordinary buttercups.

And all along the stream
My care hath not forgot
Crowfoot's white galaxy,
And Love's Forget-me-not.

The Idle Flowers: R. BRIDGES

But it is not so much the flowers as the leaves that are of peculiar interest to botanists, for there are usually two forms on the same plant.



WATER CROWFOOT

Showing floating leaves, submerged leaves
and flowers

Those which float on the water, sometimes in large masses, are borne on long stalks, and each blade is three-lobed though each lobe is subdivided into smaller lobes. Those, on the other hand, which remain submerged are well sheathed at their bases, and their blades are finely divided. These fine, almost hair-like divisions allow the water to pass freely between them.

There are really several species of water crowfoot, but they differ only in comparatively slight detail, mainly in connexion with their leaves. Some indeed have no finely cut submerged leaves at all, whereas in others all the leaves are deeply divided and submerged. The specific name adopted here (*aquatilis*) might be looked upon as a general one for all these species, for specific distinctions are too detailed for consideration.

Unlike most terrestrial buttercups, water crowfoots are not bitter to the taste.

The water violet may also be found growing in slow streams or ditches; but it is a rare plant in the wild state though frequently seen figuring in water-gardening in parks and botanic gardens. This plant is not a violet at all, but is a member of the primrose family (PRIMULACEAE, Dicot., p. 107). It is possible that the plant was originally called a violet because it superficially resembles a stock, and at one time stocks were called violets.

The water violet is a handsome plant growing one to two feet high, and presenting its large, lilac-coloured flowers on erect stems well above the water during May to July. It is the only British member of the genus *Hottonia*. There is only one other species and that is confined to North America. The British species is common to Europe and Siberia. The generic name was given in honour of the eighteenth-century Dutch botanist, P. Hotton. The water violet is *H. palustris* (from the Latin *palus*, swamp).

Most of the leaves of the plant are submerged and they are therefore finely divided; hence the not-so-common alternative name of featherfoil. The flower-stalks stand several inches above the water, and the flowers are borne in handsome spikes. Each flower is typical of the primrose family. There is a yellow 'eye', and both pin-eyed and thrum-eyed flowers occur.

COASTAL AREAS

In coastal areas there is nothing new of importance to be discovered during May, though a few more plants are beginning to display their flowers for the first time during the year.

Scurvy-grass (*Cochlearia officinalis*), of the family CRUCIFERAE, Dicot., grows on the coast and in muddy areas of the seashore.

It is a small perennial, growing four to ten inches high and displaying its white flowers in corymbs typical of the family during May to August. The small radical leaves are heart-shaped and borne on long stalks. Those borne on the stems are sessile, oblong and pointed and there are two low marginal projections which tend to encircle the stem (the generic name is from the Latin *cochlear*, spoon). The entire plant is fleshy.

Another of the pearlwrts (*Sagina* species, p. 262), members of the pink family (CARYOPHYLLACEAE, Dicot., p. 99), now appears on the scene. It is the sea pearlwort (*S. maritima*), which grows on the seashore and in other maritime habitats. It is a very small plant growing one to six inches high and displaying its white flowers during May to September. The stem tends to be procumbent and the internodes are exceptionally long. The linear leaves are fleshy.

The sea purslane should be easily found growing on the seashore in tangled masses, for it is very common. It also is a member of the pink family (CARYOPHYLLACEAE, Dicot.) and belongs to the genus *Arenaria* (from the Latin *arena*, sand). The sea purslane is *A. peploides*. It is a small, prostrate perennial, growing to a height of about ten inches and presenting its small white flowers during May to September.



Harold Bastin

WATER VIOLET

THE FLORAL YEAR

The leaves are sessile and broadly lance-shaped, and they are borne in pairs. They also are fleshy. The white flowers, unlike those of the stitchworts (p. 157), are sessile and borne singly. But fundamentally they resemble stitchwort flowers, though the petals are pointed and not notched. The fruit is a large, globose capsule.

OTHER FLOWERS WHICH MAY APPEAR IN DAMP MEADOWS, DITCHES, MARSHES, STREAMS AND COASTAL AREAS DURING MAY

(The number following each flower is the page on which it is mentioned or described)

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Bitter-cress, Hairy, 186	Willow, Almond-leaved, 151
Bitter-cress, Large-flowered, 186	Willow, Bay-leaved, 199
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Ragged robin, 186	Willow, White, 150
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PART VII

JUNE

So, some tempestuous morn in early June,
When the year's primal burst of bloom is o'er,
Before the roses and the longest day —
When garden walks and all the grassy floor
With blossoms red and white of fallen May
And chestnut-flowers are strewn.

Thyrsis: MATTHEW ARNOLD

ALL twelve months in Britain have their characteristic features, and if argument arose about which is the best, there would doubtless be champions for each of the twelve; but the majority would have to concede many points in favour of June. It is the midsummer month (for in it the summer solstice of the northern hemisphere occurs), the month when we are surely justified in expecting warm and bright weather, and certainly the month when the flora is most lavish. The earth's green mantle is at its deepest and thickest; even the ash (p. 146) has deigned to don its foliage. The scent of flowers is everywhere, and new-mown hay is contributing its share to the myriad perfumes of the countryside.

June is the sixth month of the modern calendar; the fourth of the old Roman calendar. There is no agreement about the origin of its name. The Latin name is *Junius*, and some have it that this was given in honour of Junius Brutus. According to Ovid, however, Juno claimed that the month was named after her. It seems therefore that the true origin is lost in obscurity. Our Anglo-Saxon forefathers called it dry month and midsummer month.

It is the month of June,
The month of leaves and roses,
When pleasant sights salute the eyes
And pleasant scents the noses.

The Month of June: N. P. WILLIS

TREES

MOST British trees are now well launched on their seasonal activities. Their leaves are mature and most of them have already displayed and discarded what flowers they can boast. But early in June such trees as

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Left, tulip tree in Sussex; below, flowers, buds and leaves of tulip tree—



T. Edmondson

TULIP TREE

the horse-chestnut (p. 196) are still bedecked with bloom; on the other hand, many others are now fertilised and are setting about the business of fruit production. In fact some, such as the elms, are now already bearing fruits (p. 92). Indeed, in June, apart from the not very common tulip tree, those which are blooming for the first time in the year are small and frequently more of bushy than arboreal habit. In Britain, the tulip tree is cultivated solely for ornamental purposes, so it is to be found only in parks and on estates. It is not indigenous to this country but is of American origin; on that continent it thrives and is of considerable economic importance on account of the timber it yields.

The tulip tree belongs to one of the most primitive of all flowering plants, namely, the magnolia family (MAGNOLIACEAE, Dicot.) — a family made up mainly of tropical and sub-tropical trees and shrubs. Tulip tree is the only member of the genus *Liriodendron* (*L. tulipifera*). The generic name is derived from the Greek *lirion*, lily, and *dendron*, tree.

The winter habit of this handsome tree is described on p. 78. Now in its full summer dress there is no mistaking it, for both leaves and flowers are unique in the British flora. Each leaf is made up of a long leaf-stalk supporting a curious leaf-blade. This has four pointed lobes, two on each side of the midrib. Sometimes the lower of the two is subdivided into two smaller lobes. But there is no terminal pointed lobe; in fact, it seems as if the leaf has been severed transversely across the midrib by an almost straight cut except where midrib itself ends and at that point there is a slightly re-entrant notch.

During June and July (sometimes even August) the tulip tree blooms — often profusely. Then it is a wonderful sight, for the entire crown of

JUNE

green branches seems to be covered with thousands of drab-white tulips. From this fact the tree derives its name; but botanically it is a serious misnomer for this tree is a Dicotyledon and the tulip itself belongs to the lily family (LILIACEAE) and is therefore a Monocotyledon.

When in bud the flower is enclosed in a sheath. As it opens it displays six large petals. Each is greenish-white on the outside, yellow on the inside and has an orange-coloured nectary at its base. There are numerous large stamens and many free carpels. After fertilisation each carpel forms a winged fruit, the entire collection of fruits assuming the formation of a dense cone. In due course the 'cone' opens out and the fruits become freed and dispersed by the wind. But this does not often happen in Britain, for here the fruits seldom ripen.

Whose candles light the tulip tree?
What is this subtle alchemy
That builds an altar in one night
And touches the green boughs with light?
Look at the shaped leaves below
And see the scissor marks they show,
As if a tailor had cut fine
The marking of their every line.

SACHEVERELL SITWELL



DOGWOOD

T. Edmondson

The true dogwood does not often grow as a tree in the wild state ; but it is a fairly common bush attaining a height of five or six feet in our hedgerows and presenting its masses of small white flowers during June and July. It belongs to the family CORNACEAE, a family composed mainly of shrubs indigenous to north and south temperate areas and to the mountainous habitats of the tropics. A number of such shrubs are cultivated for ornamental purposes in this country, for example, the familiar Japanese laurel with large oval pointed leaves, green splashed with pale yellow (not a true laurel at all, p. 595).

Dogwood belongs to the only genus which represents the family indigenously in Britain, namely *Cornus* (from the Latin for a horn, referring to the nature of the wood). There are only two native species, the other being dwarf dogwood, an inhabitant of the mountainous regions of north Britain (p. 373). Dogwood itself is *C. sanguinea*, the specific name being derived from the Latin *sanguis*, blood, for at all times of the year the twigs are red — light red or even orange during the growing season and crimson during winter. This species is frequently known as cornel.

The oval pointed leaves with wavy margins are borne in opposite pairs. The foliage makes a brilliant display during autumn (p. 585).

The white flowers are collected into dense umbels ; in fact the family CORNACEAE is closely related to the UMBELLIFERAE (p. 165). Each small flower is composed of four small petals only slightly supported by a whorl of four very insignificant sepals. There are two carpels fused to form an ovary which is embedded in the receptacle, and on its upper surface there is a nectary. The flower is insect-pollinated. Sometimes the parts of the central flower in the umbel are in fives instead of fours. The fruit is described on p. 574.

In woods during May we discovered the moschatel (p. 164) — the only herbaceous member of the family CAPRIFOLIACEAE, Dicot., native to Britain. Now we are to meet most of the other common members of this family, but they are not herbs. There are, for example, the elders and the guelder rose which, like the wayfaring tree (p. 202), are small arboreal or large shrubby plants, and the climbing, but woody honey-suckle.

The common elder, when growing as a tree, grows very fast and soon attains its maximum height of ten to twenty feet. But this only happens when it is in a wood. More often it occurs as a large shrub in hedgerows. It thrives best in moist but well-drained soils.

Elder belongs to the genus *Sambucus*, which is of exceptionally wide distribution, being found in most temperate countries and in Asia, Australia and South Africa. The generic name is derived from the Greek *sambyke*, for its branches are used for making crude musical instruments (see p. 281). The common elder is *S. nigra*. It displays its masses of cream flowers during June and July. Its winter habit is described on p. 79.

Some writers claim that the Cross of Calvary was made from elder wood. Others say that Judas hanged himself from an elder tree.

Holofernes. Judas I am,—

Dumain. The more shame for you,

Judas.

Hol. What mean you, sir?

Boyet. To make Judas hang himself.

Hol. Begin, sir; you are my elder.

Biron. Well followed: Judas was hanged on an elder.

Love's Labour's Lost, Act V,
Sc. 2: SHAKESPEARE

The characteristic leaves are borne in pairs, each pair lying in a plane at right angles to the next. The leaf is compound with a thick stalk bearing two to five pairs of lateral, broad, lance-shaped, serrated leaflets, and a terminal one. There are no stipules in this species.

The small, strangely scented cream flowers are borne in dense, disk-shaped inflorescences. Each flower has a calyx tube, five-toothed at its rim, formed from five fused sepals. The five petals are also joined to form a small tube, but then the segments spread out in salver fashion. There are five long stamens which alternate with the petals. Two carpels have fused to form the ovary which has no style. The fruit, a berry, is described on p. 574.

Old elder wood is used for making skewers. From the younger branches the broad cylinder of pith is sometimes removed and crude musical instruments made from the resulting hollow tube. Such a tube has also been a favourite with country boys for centuries because it makes a good pea-shooter.

That's a perilous shot out of an elder-gun, that a poor and a private displeasure can do against a monarch! you may as well go about to turn the sun to ice with fanning in his face with a peacock's feather.

King Henry V, Act IV, Sc. 1: SHAKESPEARE

Elder pith is very useful in microscopic work especially in the biology laboratory.

Elder has for many years been looked upon as a plant with particular



T. Edmondson

ELDER TREE IN FLOWER

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medicinal virtues. The inner bark has been used as a cathartic. The dried flowers yield a valuable oil.

You may satisfie yourself perfectly of every particular. There is hardly a Disease from the Head to the Foot but it cures. It is profitable for the Head-ach, for Ravings and Wakings, Hypochondriack and Mellancholly, the Falling-sicknesse, Catarrhes, Deafenesse, Faintnesse and Feavours.—*Adam in Eden*: COLES

Truly an awe-inspiring list, and a most valuable plant if only half such claims could be substantiated. Yet many in the past have entrusted their ills to the care of the common elder. On this account even the great Dutch botanist and physician Boerhaave (1668-1738) saluted every elder bush that he encountered.

Elder berries are edible though not palatable, neither are they nutritious (p. 574).

The dwarf elder (*S. ebulus*, the specific name being Latin for the plant) occurs in waste places and bushy areas. It blooms during June to August. It is certainly a dwarf compared with the common species, for it grows only two to three feet high. Unlike the common elder, its leaves have stipules and the flowers are purplish.



GUELDER ROSE

Anne Jackson

JUNE

A close relative of the elder is the guelder rose ; in fact, this plant is sometimes called water elder. The common name, guelder rose, may be derived from *rose de Gueldre*, that is, Gelderland, the Dutch province, for the plant is widely grown in Holland. On the other hand, Sir J. E. Smith suggested that the name is a corruption of 'elder rose'. There is a host of more localised names for the plant, including royal elder, love roses, gatteridge and dog rowan tree (*Frontispiece*).

Guelder rose thrives in wet woods and hedgerows. Being a relative of the elder, it belongs to the same family (CAPRIFOLIACEAE, Dicot.) ; but it is even more nearly related to the wayfaring tree (p. 202) ; in fact, it is included in the same genus, namely, *Viburnum* (*V. opulus*). It also displays its creamy white flowers during June and July. The winter habit is described on p. 80.

The leaf is five-lobed and serrated as indicated in the specific name which is an old Latin name for maple.

The flowers are borne in disks very like those of elder. In fact, the entire floral structure — inflorescence and flowers — is very similar to that of elder except that in the case of guelder rose the flowers towards the rim of the disk, especially the outermost ones, are much larger than the rest and they are sterile. The dark-red fruits are described on p. 574. They are edible though not very palatable.

Guelder rose is supposed to be valuable in treating cramp.

A very popular garden species is *V. sterile*, so named because all the flowers in the dense spherical inflorescences are sterile. The shape of the inflorescence is responsible for the familiar name of snowball tree.

OTHER TREES WHICH MAY BE BLOOMING DURING JUNE

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WOODS AND THICKETS

Pleasant it was, when woods were green,
 And winds were soft and low,
 To lie amid some sylvan scene,
 Where, the long drooping boughs between,
 Shadows dark and sunlight sheen
 Alternate come and go.

Prelude : LONGFELLOW

THE largest and most conspicuous of all members of the snapdragon family (SCROPHULARIACEAE, Dicot., p. 226) is the tall and dignified foxglove, common enough in the wild state especially in the more hilly parts of Britain from the south of England to well into Scotland. It favours woods, thickets and dense hedgerows, though it sometimes appears on open banks and even along roadsides. The beautiful purple flower-bells appear throughout the summer from June to September (Plate 10).

The foxglove is the only British member of the genus *Digitalis* — a fairly large one spread over Europe, western Asia and the Canaries. Foxglove is *D. purpurea*. The generic name is from the Latin *digitus*, finger, for each corolla-bell resembles the finger of a glove. The Anglo-Saxon for foxglove is *foxes glofe*; but authorities take the view that the name was really given in honour of Fuchs, the sixteenth-century German botanist. Yet, strange to say, the German name for the flower is *fingerhut* (which also means thimble). The suggestion often made that the name is a corruption of folk's or fairy's glove has been discredited.



Ernest G. Neal

FOXGLOVES

This plant is a large perennial growing two to four feet high, sometimes even higher. It is very shallow-rooted.

The leaves are very large and lance-shaped having serrated margins, wrinkled over their entire surface and covered with a fine down. There is usually a mass of large radical leaves from the centre of which emerge one or more flowering shoots. The leaves on these shoots are smaller and they get smaller and smaller up the stalk.

The flowers are borne in enormous racemes made one-sided because there is a curious twist in each separate flower-stalk. The older flowers are at the bottom of the raceme, and frequently one finds that these are quite mature — sometimes even in fruit — while the uppermost flowers are still in bud. Meredith referred to this clear characteristic when he wrote 'an ever lessening bell'. Alas! these beautiful petals are very deciduous, so, joined as they are in the form of a bell, they are soon shed in one piece. Sometimes the last one or two on the top of the raceme continue in apparent defiance for a long time after the rest of the flowers are well on the way to fruiting maturity. The quick shedding of the flowers is no doubt the reason why this plant has sometimes been chosen as the emblem of 'pride before a fall'.



Harold Barton

SECTION OF FOXGLOVE FLOWER

Through quaint obliquities I might pursue
These cravings; when the foxglove, one by one,
Upwards through every stage of the tall stem,
Had shed beside the public way its bells,
And stood of all dismantled, save the last
Left at the tapering ladder's top, that seemed
To bend as doth a slender blade of grass
Tipped with a rain-drop. . . .

The Prelude: WORDSWORTH

Each flower is borne on a stalk which emerges from the axil of a small, lance-shaped foliar bract. The five sepals, unequal in size, are joined in the form of a tube. The purple corolla is a bell with four or five irregular lobes at its rim. At the mouth of the bell are darker spots and some white hairs which act as honey-guides. As in most species of irregular SCROPHULARIACEAE, there are two long and two short stamens. The two carpels

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are fused to form a two-chambered ovary having a long style surmounted by a two-cleft stigma. The style persists for a long time on the fruit, a capsule, which is also surrounded by a persistent calyx.

The foxglove has well-known medicinal virtues. From it digitalis is obtained, and this yields a number of very valuable drugs all of which affect the heart, so they must be taken only under medical supervision.

There are many colour varieties of cultivated foxglove, among which is the white variety which sometimes also appears in the wild state. Curiously enough this variety does not seem to attract insects.

And the foxglove, dyed and painted, in this innocent green shade,
That drops his flowers for fairy hands to try
Fitting their fingers to that sweet pomander,
Though now it prisons them in velvet fetters,
Is a tower of honey cups where dandy wasps pay call
Who are Swiss Guards to the power that dwells
In darkest pillared, most stag-antlered elm :

In Eckington Woods : SACHEVERELL SITWELL

Two very closely related herbaceous members of the rose family (ROSACEAE, Dicot., p. 302) may be encountered in bloom during this month, one very common, the other not so common. They are the



Harold Bastin

WATER AVENS

avens — wood avens and water avens. Wood avens is common in woods and hedgerows. Water avens occurs in damp woods and just as frequently on river banks ; but since the wood avens is usually a wood lover it is best to consider them both here. They are members of the large temperate and arctic genus *Geum*. Other members of the genus must be familiar to many, for they are popular with gardeners, especially in their herbaceous borders. The name of the genus is derived from the Greek *geuo*, to taste, for their roots have an aromatic flavour ; in fact, those of water avens taste something like cocoa (see p. 287). The common name avens refers to the awn on the fruit and is probably derived from the Latin *avena*, oat (p. 170) for that is heavily awned.

JUNE

Wood avens, sometimes known as common avens or herb Bennet (from the Latin *herba benedicta* because it is supposed to have medicinal virtues), is *G. urbanum*; water avens is *G. rivale*. Both species are perennials, blooming during June to August.

Wood avens (*G. urbanum*) grows one to three feet high and has large deeply toothed and lobed leaves. The yellow flower is fundamentally like the strawberry flower (p. 123), even to the possession of an epicalyx. The fruits are again achenes, but in this case they are hairy with a terminal awn which has a double-curved kink about half-way up. When the fruit is quite ripe that portion of the awn above the kink falls off.

The not so common water avens (*G. rivale*) grows only one to two feet, though altogether it is sturdier than its relative. Its leaves are smaller but also deeply lobed, so that they appear to be compound, and each lobe is irregularly serrated. The flowers (again typically rosaceous) are much larger than those of wood avens; the sepals purple and the petals orange-bronze in colour. The corolla does not open out so widely as that of wood avens. In the United States the purplish aromatic root of water avens is sometimes used as a substitute for cocoa; there it is called 'chocolate root'.

Sometimes a hybrid between the two avens (*G. intermedium*), which discloses characteristics between the two progenitors, may occur in damp woods.

For the first time in the year we now meet the willowherb family (ONAGRACEAE, Dicot), a fairly large family at home mainly in north temperate regions. Of the few genera in Britain, that containing the willowherbs (*Epilobium*) is the most common. But all common willowherbs are July flowers, so detailed consideration of the genus will be deferred (p. 458). Meanwhile, the broad smooth-leaved willowherb (*E. montanum*) is blooming now in woods and even on some dry banks in the more hilly districts, as the specific name implies. It flowers until July — a perennial attaining a height of anything from six inches to two feet.

A more interesting member of the same family (ONAGRACEAE, Dicot.) which also appears blooming in damp woods during June, and continues to display its small flowers until August, is the enchanter's nightshade. This plant also frequently invades cultivated ground where it becomes a troublesome weed. Now it must be realised at once that this plant is in no way related to the other nightshades all of which belong to the potato family (SOLANACEAE, Dicot., p. 289). Enchanter's nightshade bears very small white or pinkish flowers, but apart from this it looks very like a small, graceful willowherb. It is a member of the north temperate and arctic genus *Circaea*. There are only two British members of the genus —



Ernest G. Neal

ENCHANTER'S NIGHTSHADE

the common enchanter's nightshade (*C. lutetiana*) and the rare alpine enchanter's nightshade (*C. alpina*); the latter occurring only in north Britain. The generic name is after Circe, the enchantress who could transform men into beasts. The specific name for the common species is from the Latin *Lutetia*, the old Roman name for Paris. Both these names, generic and specific, are puzzling; in fact, the reasons why they were chosen are still unsolved mysteries. Several suggestions have been put forward to explain why the plant is connected with an enchanter and the goddess Circe, but none of them is convincing. So also is the apparent connexion with Paris.

Enchanter's nightshade is a perennial growing one to two feet high. It is a slender plant bearing its broad, serrated and pointed leaves in opposite pairs. The flowers grow on long, loose, leafless, terminal and lateral spikes. The very small white or pinkish flowers betray considerable reduction during evolution. There are two cleft sepals, only two heart-shaped petals, two pink stamens and four carpels

fused to form a hairy ovary with a two-lobed stigma. The fruit is a nut covered with hooked bristles.

The first of the true nightshades to bloom during the year is the deadly nightshade, sometimes also known as dwale, and this opens its flowers in June and continues to do until August. It appears in open woods on calcareous soils and in some waste places, but it is not common. Frequently it appears together with the foxglove (p. 284) — an interesting point since both plants are of exceptional value in medicine.

JUNE

Foxglove and Night-shade, side by side,
Emblems of punishment and pride,
Group'd their dark hues with every stain
The weather-beaten crags retain.

The Lady of the Lake: SCOTT

It is of the utmost importance that we should recognise the difference between the deadly nightshade and its close relatives, woody nightshade or bittersweet (p. 306) and black nightshade (p. 454). The deadly nightshade is the only really very poisonous one of the three, yet it is only one of any value in medicine. Unfortunately, many country-folk call the woody nightshade 'deadly', and this has sometimes led to embarrassment. For example, Dr. W. O. James, of the Botany Department, University of Oxford, who is director of the Oxford Medicinal Plants Scheme, told me of his appeal during the Second World War for specimens of deadly nightshade which had become even more important since drugs were in such short supply. As would be expected, the response was great; but, alas, in all too many cases the plants which reached the Department were woody nightshade, which is much more common and thus more easily procured, but useless as a drug.

All the nightshades, with the exception of the enchanter's (p. 288), are members of the potato family (SOLANACEAE, Dicot.). This important family contains several plants of considerable economic value, such as, potato, tomato, tobacco, egg-fruit and chilli. The true mandrake (p. 221) also is a member. The potato has sometimes been referred to as the 'eatable nightshade'; the adjective should be emphasised, for all true nightshades are poisonous in varying degrees, and so also are the different forms of wild potato (not native to Britain). Then there are several valuable ornamental plants belonging to the same family, all coming originally from America, but now very popular in British gardens; for example, *Nicotiana*, *Petunia*, *Salpiglossis* and *Schizanthus*. The family is centred mainly in South and Central America.

Woody and black nightshades belong to the same genus as the potato, namely, *Solanum* (p. 306); but the deadly nightshade is a member of the very small European and Asiatic genus *Atropa*. This name is from Atropos, of the Fates, from the negative *a* and *trepo*, to turn; that is, no escaping. The common name nightshade is from the Anglo-Saxon *nihtscada*, narcotic, and that the plant certainly is. The alternative common name dwale is Middle English derived from the Danish *dwale*, trance. In this connexion there is an interesting legend that during a truce between the Scots fighting under Duncan and the Danes invading under Harold, the latter ran out of food, so the former supplied them with food and drink among which was some deadly nightshade extract. Having thus disabled their foes, the Scots easily dispatched them.

Deadly nightshade is *A. belladonna*, the specific name being Italian for beautiful lady, for an extract of the plant was, and still is, among theatrical



DEADLY NIGHTSHADE

Bottom left, flower in section; bottom right, fruit

folk, used for causing dilation of the pupils, thus producing the effect of large and lustrous eyes. The valuable sedative drug atropine is obtained from the plant.

Deadly nightshade is a large perennial herb growing two to four feet high. It has broad, oval and pointed leaves borne alternately on the stem. Each solitary flower grows on a short stalk which emerges from the axil of an upper leaf. There is a pronounced five-toothed calyx; five purplish-blue petals forming a five-toothed tube about an inch long; five stamens inserted inside the corolla tube; and two carpels united to form a two-chambered ovary having a long style. The fruit is a conspicuous, globular, black berry, which, when quite ripe, is sweet but not poisonous.

The most characteristic member of the family VALERIANACEAE, Dicot., may now be found blooming in moist woods. This is the great or true valerian: a less characteristic member of the family, namely, corn salad or lamb's lettuce, bloomed much earlier in the year

(p. 181). The VALERIANACEAE is a small family though it is widely distributed in most continents with the exception of Australia and New Zealand.

Great valerian belongs to the genus *Valeriana* (*V. officinalis*). The generic name is from the Latin *valeo*, to be healthy; though some authorities claim that it is named after Valerius, a Roman physician. In any event, the plant certainly has medicinal virtues as is indicated in its specific name and in another of its many rural names — all-heal. People of the past especially valued highly the healing properties of this plant, especially for wounds and for nervous disorders.

... a balsam, or indeed a blood,

Dropping from Heaven, which doth both cleanse and close

All sorts of wounds, of such strange force it is.

Seek out this All-heal, and seek no repose

Until thou find and use it to thy good.—*An Offering*: GEORGE HERBERT

Like most members of the family, great valerian has thick, strong-smelling underground stems. It is a perennial, growing two to four feet high, and displays its heads of pale-pink flowers during June to August. The large leaves are compound, being made up of about five pairs of lateral leaflets (each one of a pair being inserted on the stalk not quite opposite the other) and a terminal one. Each leaflet is lance-shaped with conspicuously serrated margins.

The small flowers are of various shades of pink though sometimes they may be white. They are borne in masses in large, loosely constructed inflorescences. In each flower the sepals are modified to form a feathery pappus and this remains after fertilisation attached to the fruit to aid it in its air-borne dispersal. The five pink (or white) petals form a tube having five irregular lobes at its rim. There are three stamens and the ovary is made up of three fused carpels with a common, long, thin style.

Cats love to lie and roll in valerian as they do in catmint (p. 432). Strange to relate, rats indulge in this pastime too. Sometimes great valerian is referred to as cat valerian.

Among other valerians is the marsh valerian (*V. dioica*) which is a much smaller species (six to ten inches high) and has oval radical leaves but simple, deeply cut, cauline leaves. The rose-coloured flowers may still be found in marshland, though they usually appear somewhat earlier than those of the great valerian.

Sometimes the red-spur valerian can be found growing wild on walls and on chalk cliffs blooming from June until September. But it is a garden escape. This valerian belongs to another genus (*Centranthus*, or *Kentranthus*, *ruber*). At the base of each petal-tube of this species there is a long spur. This is indicated in the generic name which comes from the Greek *kentron*, a spur, and *anthos*, flower. The flowers of this plant are bright red as indicated in the specific name which is Latin for that colour. The petal-tube is exceptionally long and thin, and the spur very pronounced.

The difficult family UMBELLIFERAE, Dicot. (p. 165), has two representatives presenting their flowers in woods during June. One is another very poisonous plant, namely, the hemlock, perhaps the largest of all British umbellifers. It also frequently occurs in hedges, displaying its enormous compound umbels of white flowers during June and July. It is the only British species in the small genus *Conium* (*C. maculatum*). The generic name is from the Greek *koneion*, hemlock. The common name is from the Anglo-Saxon *hymlice*. (In the United States and Canada, there are other very well-known hemlocks; but these are in no way related to the British hemlock for they are coniferous trees.¹)

Hemlock is a biennial growing anything from three to eight feet high. It is very easy to identify for, apart from its huge dimensions, it is the

¹ *Trees in Britain*, p. 120.



Ernest G. Neal

HEMLOCK

only British umbellifer having a smooth stem conspicuously covered with purple spots. In both vegetative and reproductive (floral and fruit) habit, hemlock is fundamentally similar to the wild beaked parsley (p. 167). Each segment of the much indented compound leaf, however, is tipped with white, and the three bracts subtending the main stalks of the floral umbel are turned to one side. The large fruit has very

pronounced ridges, and many oil channels embedded in its wall. It must be remembered that this plant is very poisonous.

O sickle cutting hemlock all day
long!
That the husbandman across his
shoulder hangs,
And, going homeward about even-
song,
Dies the next morning, struck
through by the fangs.

King Arthur's Tomb :
W. MORRIS

Morris's verse is a trifle more terrifying than it need be, though one cannot be too careful of the plant. It is said that hemlock yielded the poison by which Socrates met his melodramatic death; other authorities say, however, that the poison was not extracted from this hemlock but from the water hemlock or cowbane. On the other hand, from the hollow stem of hemlock Pan made his shepherd's pipes.

My heart aches, and a drowsy numbness pains
My sense, as though of hemlock I had drunk,
Or emptied some dull opiate to the drains
One minute past, and Lethe-wards had sunk.

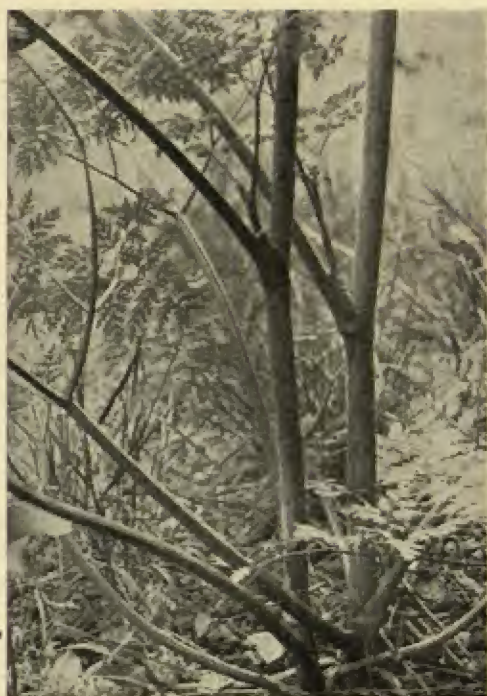
Ode to a Nightingale : KEATS

Giant hemlocks, dry as death, and taller than dead towers of bones,
Hold their poison higher than the nettle brakes,

In Eckington Woods : SACHEVERELL SITWELL

The other June member of the UMBELLIFERAE, Dicot., is wood sanicle, and this is indeed confined to woods. It is a perennial presenting its very compact umbels of white or pinkish flowers during June and July. It is the only British member of the genus *Sanicula* (*S. europaea*), the name being a diminutive of the Latin *sano*, to heal; for, like many other umbellifers, this plant has certain medicinal virtues.

Wood sanicle is not difficult to identify, for it has some very characteristic features. For example, the glossy leaves are simply but deeply cut into three or five serrated lobes. All the large leaves are radical; only a



Harold Bastin

HEMLOCK

Showing the smooth, spotted stems

few very small ones appear on the stalks and these usually subtend a branch flower-stalk. The compound umbels are unusual in that, though there are about the usual five main branches subtended by leafy bracts, the flowers in the actual umbels are sessile so that the small umbels themselves are really tightly packed cymes. So the flower-head of wood sanicle is not so much an umbel of umbels (p. 165) as an umbel of cymes. The fruit, more or less conical in shape, is covered with strong, hooked bristles.

Two members of the mint family (LABIATAE, Dicot., p. 158) open up their flowering season in woods and elsewhere during June. One is wood sage or wood germander, a perennial growing six inches to two feet high. It also grows in heathy places. Though belonging to the same family as sage or clary (*Salvia verbenaca*, p. 244), it is sufficiently different to qualify for inclusion in another genus, *Teucrium* — a very large and cosmopolitan one but not heavily represented in Britain. Wood sage is *T. scorodonia*. The genus is named after the Trojan prince Teucer, because he favoured certain of its species as medical herbs. The specific name is derived from the Greek *skorodon*, garlic; the plant, however, does not smell of this, but it is very bitter and in the past was used as a substitute for hops, as it still is in some parts of France. This graceful plant has a long flowering season — from June to October.

It is fundamentally like other labiates such as the white deadnettle (p. 222). The wrinkled, pointed, heart-shaped leaves are borne in opposite pairs. The yellowish-white flowers grow in terminal and axillary racemes (unlike those of white deadnettle, but like sage), and the racemes are one-sided. The calyx tube is two-lipped; the upper lip is oval and pointed, the lower four-toothed. The upper lip of the corolla is deeply cleft into two, so it forms no hood over the four stamens and long style; the lower lip is three-lobed with the middle lobe much the largest.

Wood sage is still accepted by some herbalists as a useful tonic and diuretic.

The other member of the LABIATAE, Dicot., which begins blooming in woods during this month is wood betony. It also flourishes on heaths and along roadsides and presents its purple flowers arranged in spikes during June to September. It is very similar to hedge woundwort which is described on p. 433. Both these, and other woundworts, belong to the genus *Stachys*. The first member of this genus to open up its flowers during the season was the corn or field woundwort (p. 180), and the genus is described in connexion with that plant. Wood betony is *S. betonica*. The accepted derivation of the specific and common names is that *betonica* is a corruption of *Vettonica* which is after the Spanish tribe the Vettones who used the plant as a medical herb. Indeed, in many parts wood betony has been highly prized for its medicinal virtues.

JUNE

When it [a stag] is wounded with a dart, the only cure he hath is to eate some of the herbe called Betony, which helpeth both to draw out the dart, and to heal the wound.—*History of Brutes*: FRANZIUS

Wood betony differs from the hedge woundwort in that its flowers are more nearly purple than red and they are grouped in denser spikes. Furthermore, going down the stem from the lower flowers of the spike there is a space and then a whorl of flowers borne in the axils of a pair of leaves. The plant is perennial, but it is much smaller than hedge woundwort, growing four inches to two feet high. It is also more graceful.

The white climbing corydalis is not particularly common. It is a member of the comparatively simple family FUMARIACEAE, Dicot., of which the fumitory is a more accessible representative (p. 358). White climbing corydalis belongs to the genus *Corydalis* (*C. claviculata*). The generic name is from the Greek *korydalis*, a crested lark, from the shape of the flower, and the specific name is from the Latin *clavicula*, a vine tendril, for its leaves terminate in tendrils which enable it to climb and scramble. It is an annual producing its white flowers during June to August or even September. It favours very open woods and thickets and other bushy parts. Both flowers and leaves are very like those of fumitory (p. 359), except that the flowers of the latter are usually red (rarely white) and the terminal leaflets of the former are modified into tendrils.

Another fairly rare plant is green or green-leaved hound's tongue, a member of the forget-me-not family (BORAGINACEAE, Dicot., p. 272). It grows in woods, but is not so easily found as the common hound's tongue which is an inhabitant of sand dunes (p. 407). The two hound's tongues are the only British representatives of the genus *Cynoglossum*, a temperate and sub-tropical genus which at one time was accepted as having medicinal value. The generic name is derived from the Greek *kyon*, dog, and *glossa*, tongue, since the surface of the leaf has the texture of a dog's tongue. The green hound's tongue is *C. montanum*, for it occurs in the more hilly regions. The flowers are not arranged in such an obviously scorpioid inflorescence (p. 389) as that of the common hound's tongue. Each flower is reddish changing to blue, thus undergoing the colour-change so characteristic of this family. The plant blooms during June and July.

The lesser or common wintergreen is an evergreen herb, hence its common name. It thrives in woods, displaying its curious white flowers during June and July. The wintergreens — larger or round-leaved, the intermediate, the lesser, and the serrated — are the only British herbaceous members of the heather family (ERICACEAE, Dicot., p. 478) which is composed mainly of trees and shrubs such as strawberry tree (p. 553), and heather (p. 478). There is another rare wintergreen, the one-flowered, but it belongs to a separate genus from the rest.

THE FLORAL YEAR

The majority of wintergreens belong to the genus *Pyrola* (from the Latin having leaves like that of *Pyrus*, pear). The commonest of all wintergreens is the lesser or common wintergreen (*P. minor*), yet even that is not particularly common. It is a perennial preferring woods in north Britain and growing eight to twelve inches high. It perennates by means of underground stems. The ovoid leaves are borne on long stalks and all are radical. The drooping flowers grow on stalks eight to twelve inches high, forming pretty, one-sided racemes. There are a four-toothed calyx and a globose corolla formed of four or five white petals tinged with pink; the latter is about a quarter of an inch in diameter. There are ten stamens. The four-chambered ovary bears a robust style surmounted by a conspicuous stigma. The fruit is a capsule, and the seeds are very light, so they are easily distributed by wind.

We have already met several semi-parasites such as mistletoe and eyebright, and some complete parasites such as broomrapes and toothwort. We now meet an example of another group of plants which have an irregular mode of nutrition, namely saprophytes. Unlike parasites which prey on living hosts, saprophytes absorb dead food such as humus, dung, decaying leaves, etc. So they do not manufacture their own food from the raw materials absorbed from soil and atmosphere and consequently, like complete parasites, they are structurally and functionally degenerate.



Richard Munn

YELLOW BIRD'S NEST

The MONOTROPACEAE, Dicot., is a small family comprising nothing but saprophytes. It has advanced during evolution alongside the heather family (ERICACEAE, Dicot., p. 478); in fact, the flowers are very similar, but now, having degenerated, the plants are vegetatively very simple. The most typical example of the family is the yellow bird's nest which displays its flowers during June to August. Since it has no green leaves which must have sunlight, it can grow safely in the densest of woods, as indeed it does — mainly pine and beech woods. In fact it is sometimes known as pine bird's nest and sometimes as

fir-rape. It is a member of the small north-temperate genus *Monotropa* (*M. hypopitys*). The generic and specific names are indicative of its habitat, for the former is from the Greek *monotropos*, living alone, and the latter from the Greek *hypo*, under, and *pitys*, a pine.

Yellow bird's nest is not common. It is a perennial throwing up flowering shoots three to twelve inches high. Its roots are embedded in the thick leaf mould of the woods, and they are surrounded by masses of fungal threads which enable them the more easily to absorb food from this particularly rich substratum.

The erect stem is stout and fleshy and bears leaves which are reduced to thin, tissue-like scales, for they are of no physiological use to the plant and therefore not green. The flowers are tightly packed in pendulous spikes. Since the family is closely related to the heather family (ERICACEAE, Dicot.) — in fact, many Floras include the two families together under the latter — then one might expect the yellowish-brown flowers of yellow bird's nest to be structurally like that of heather. This is the case.

Among the Monocotyledons which begin blooming in woods during June none is particularly common, but of them all perhaps the orchids are the most interesting. The most charming of the lot is the butterfly orchis, belonging, of course, to the ORCHIDACEAE, Monocot. (p. 209). This lovely plant grows in all too few woods, displaying its comparatively large flowers, which emit a most seductive perfume (it is pollinated by night moths), during June to August. Sometimes it also occurs in damp meadow and heaths.

The butterfly orchis is included in the genus *Habenaria*, a very large genus distributed in tropical, sub-tropical and temperate countries. The name is derived from the Latin *habena*, strap, from the shape of the labellum of the flower (see p. 298). The butterfly orchis is *H. virescens*. It produces only two large, oval, radical leaves. The plant has very pronounced



Ernest G. Neal

BUTTERFLY ORCHIS WITH TWO
SPOTTED ORCHIDS

root tubers, like the early purple (p. 241).

The large white flowers are borne in racemes at the top of the stalks which grow nine to eighteen inches high. The stalks themselves bear a few bracts. The plant has not been happily named, for the flowers are not much like butterflies. There are a long spur and a large, strap-shaped labellum. The three outer corolla segments are large and spreading.

The bird's-nest orchis (no relative of the yellow bird's nest, p. 296; but similar to it in being a saprophyte) grows in woods and blooms during June and July. Being saprophytic, it needs no sunlight and therefore thrives under the densest canopy of such trees as beech. It belongs to the genus *Neottia* (*N. nidus-avis*) — not the only, but the least rare, member of a rare genus of British saprophytic orchids. The generic name comes

from the Greek *neottos*, nestling, for the underground stems and its branches and the roots from them form a nest-like mass among the leaf-mould substratum from which nutrients are absorbed. The Latin specific name clearly signifies the same habit. Surrounding the nest-like mass are many fungal threads which aid food absorption.

The plant is a perennial sending up aerial shoots six to eighteen inches high. The leaves are reduced to brown scales surrounding the stem. The flowers are unattractive and crowded into pale-brown dense spikes. The perianth lobes are spreading.

A few much rarer Monocotyledons occur in the woods of very localised places; but most of them are more familiar to us as cultivated plants, so they can receive only cursory mention here.

One is the curious Solomon's seal, a member of the LILIA-CEAE, Monocot., classed in the genus *Polygonatum* of which there



Ernest G. Neal

BIRD'S-NEST ORCHIS

are three British species, the most common being the *P. multiflorum* (common Solomon's seal), a perennial growing two to four feet high and bearing greenish-white flowers during June and July. The generic name is from the Greek *polys*, many, and *gonu*, small joint, for the thick underground stem is curiously jointed. This singular plant sends up large, arched stems which bear alternately arranged elliptical leaves emerging horizontally then slightly drooping. Hanging down from the stem of the arch at close intervals for about a foot and a half are small stalked inflorescences of about two to five flowers each. Each white flower is tubular but of liliaceous structure and tipped with green so that it looks like an old-fashioned seal. This might explain the common name, though others say that the name is to be ascribed to the seal-like leaf-scars left on the thick underground stem. What Solomon had to do with this plant it is difficult to say, though his Song reveals a profound knowledge of natural history.

Another rare liliaceous Monocotyledon is the martagon or Turk's cap lily, one of the very few British wild members of the genus *Lilium* itself. It is *L. martagon*, a perennial growing one to four feet high and displaying its lovely large, deep purple flowers during June and July. It is known as Turk's cap because the six perianth segments are recurved and give the whole flower the appearance of a martagon, a special Turkish form of turban. This floral arrangement is seen in other cultivated species such as *L. chalcedonicum*.

Perhaps the rarest of all June Monocotyledons is the gladiolus, a member of the iris family (IRIDACEAE, Monocot., p. 391). It is a perennial also blooming during June and July. The wild species is *Gladiolus illyricus*. The generic name is a diminutive of *gladius*, a sword, for all species have leaves shaped like swords. The specific name is after Illyria, for the plant is a native of that part of the Balkans. In Britain it is confined to certain areas of the New Forest and the Isle of Wight, and even there



Harold Bastin

ROOTS OF BIRD'S-NEST ORCHIS

THE FLORAL YEAR

it is not easily found. Its inflorescence stalk grows about one to three feet high and bears lovely crimson flowers very similar to those of the cultivated species and varieties with which most of us are familiar.

OTHER FLOWERS WHICH MAY APPEAR IN WOODS AND THICKETS DURING JUNE

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CANOPY OF HEDGES

The roses make the world so sweet,
 The bees, the birds have such a tune,
 There's such a light and such a heat
 And such a joy in June.

To — : G. MACDONALD

ROSES are always associated with the month of June, and well they might be, for though that hardy rose of heaths and downs, the burnet or Scotch rose (p. 254), has already ventured into bloom, all other wild species and varieties leave it until June before coming out in all their splendour. But, alas, most of our wild roses have very deciduous petals so they are not with us for long. Even garden roses do not last long individually, but the shrubs themselves have a lengthy flowering season. They start with a spurt in June, then continue blooming frequently only half-heartedly until September when there is another spurt of sometimes even luxuriance, and then they dwindle away usually stopping suddenly when the first sharp frost attacks them. This means that on occasions garden roses appear in bloom in December. But not so with wild roses, and these are our main concern; they give us little enough time to study them, and opportunity all too short to appreciate them to the full, for they are over by mid- or end-July. Yet the short-lived characters of these lovely plants have inspired poets throughout the ages from time immemorial.

Quam longa una dies, aetas tam longa rosarum :
 Cum pubescenti juncta senecta brevis
 (As long as is one day, so long is the rose's life ;
 Her brief youth and age go hand in hand.)

De Rosis Nascentibus : AUSONIUS

Gather therefore the rose whilest yet in prime,
 For soon comes age, that will her pride deflower.

Faerie Queene : SPENSER

Each Morn a thousand Roses brings, you say ;
 Yes, but where leaves the Rose of Yesterday?

Rubáiyát : OMAR KHAYYÁM (FITZGERALD)

Shakespeare's flower?

The wild rose. I think the roses are mentioned oftenest, although he may have said finer things about the violet and the cowslip.

I question if he has.

A Rosary : JOHN DAVIDSON



Harold Bastin

WILD ROSE

Note insect feeding on pollen

De rose is sweet, but de rose can't stay,
But I'm mighty glad when it blooms my way ;
De night fall dark but de Lawd send day,
An' de good Lawd know my name.

De Good Lawd Know My Name : F. L. STANTON

There was never a daughter of Eve but once, ere the tale of her years
be done,
Shall know the scent of the Eden Rose, but once beneath the
sun ;
Though the years may bring her joy or pain, fame, sorrow or
sacrifice,
The hour that brought her the scent of the Rose, she lived in
Paradise.

The Eden Rose : SUSAN K. PHILLIPS

There is a large number of different wild roses, some common, others rare. Some have been assigned specific rank ; others are considered only hybrids. But we must perforce select only a few of these, so it is proposed to examine the common dog rose, the sweet briar or eglantine and the trailing rose.

All these roses belong to the very large and important family ROSACEAE, Dicot. and all are included in the genus *Rosa* — a large genus of north temperate and tropical lands. The name is Latin for rose.

JUNE

There are several species of *Rosa* which are wild roses, but the most common of all is *R. canina*. The specific name is from the Latin *canis*, dog, a word frequently applied in naming plants as indicating inferiority or use in veterinary medicine. It is not easy to see anything inferior in the dog rose, even to the garden species (*Frontispiece*).

The roses that in yonder hedge appear
Outdo our garden buds which bloom within;

The Four Bridges: JEAN INGELow

Since the days of Ancient Rome and Greece, on the other hand, it has been considered that the dog rose yields a cure for bite from a mad dog. Pliny the Elder mentions this in his *Natural History*. By and large it seems a pity to me that the term dog is applied to any plant, much less the dog rose. It would be much nicer simply to call it wild rose.

And Eve might from the matted thorn
To deck her lone and lovely brow
Reach that same rose that heedless scorn
Misnames as the dog rosey mow.

The Flitting: J. CLARE

The wild rose is a shrub which, by means of its hooked prickles on stem, leaf-stalk and sometimes even veins, scrambles over the hawthorns, maples and other sturdy shrubs of hedges which have already passed their own flowering season. Frequently the rose branches mingle with those of the bramble whose season is yet to come. And so the climbing branches climb on, up over the hedge, tumbling down its sides, and sometimes arching over into the undergrowth and even to the grassy sward beyond.

And roses in their ecstasy have come,
We see no hut, no hall but there they wreath
Their araby, and their sweet lives outbreathe.
Rude hedges have their thousands too, where some
So nestle down, the dazzled eye supposes
At first that this year grass has brought forth roses.

Time of Roses: EDMUND BLUNDEN

It is certain that the wild rose, a perennial shrub, never fails to attract attention during the months of June and July when it is in full bloom.

The compound leaves are made up of two or three pairs of lateral leaflets and one terminal leaflet, all oval and pointed with evenly serrated margins. At the base of the leaf-stalk is a pair of large, long and pointed stipules. The leaf-stalk, like the stem, and sometimes even the back of the midribs bear slightly curved hooks.

The flower is typical of the genus. There is a deep and hollow receptacle. At its rim are inserted five frequently toothed or lobed sepals

which embrace the petals when in bud but then curve backwards as the flower opens. The pretty petals are large, heart-shaped and varying in colour from white to a deep blush. White flushed with pink is the most common colour. There are many yellow stamens and many free carpels, the latter partially sunk in the receptacle and giving off long styles all of which in this species become loosely united into a column. It is the delicate perfume of the flower which attracts insects, for there is no nectar. The fruits which are achenes embedded in the swollen red receptacle to form the 'hip' are described on p. 575. These hips have a high vitamin C content, so today rose-hip syrup is considered to be a valuable article of diet, especially for children.

As is to be expected, the rose has played many parts in legend, lore and heraldry. It is not possible to go into details here, though a few might be mentioned. The Greeks and other south European peoples believed that the rose was originally a beautiful girl who became transformed into the plant. The Arabs claim, on the other hand, that it first arose from a drop of perspiration from Muhammad's brow. Roses have been worn into battle by many nations and races from the days of the Romans to the Wars of the Roses. They figure in design and heraldry *ad lib.* And now today we have Rose Day (Alexandra Rose Day), the first of all modern flag days. An old Danish priest grew roses in his garden near Copenhagen and sold them to collect money for the relief of cripples, waifs and strays. Queen Alexandra, consort of King Edward VII, and herself known as the beautiful Rose of Denmark, once visited this good priest and thus became inspired to found a Rose Day. This then became known as Alexandra Rose Day, and was first held on June 26, 1912. That day certainly caught the imagination of the people of Britain. Even the great Nijinsky and Karsavina, on the evening of that day, danced the lovely ballet *Le Spectre de la Rose*, each wearing Alexandra wild roses in their costumes. On that first of all flag days, £20,000 was collected. Thirty-three years later that sum was eclipsed by the total of £174,000 paid for Alexandra roses on June 26.

The sweet briar or eglantine (*R. eglanteria*) is another scrambler which grows in hedges and thickets on chalky soils and blooms during June and July. The specific name is from the French for sweet briar, *églantier*. It probably originated, however, from the Latin *acus*, needle, and *lentesco*, to adhere to, a meaning which is obvious, for this plant is covered with prickles, some hooked and some straight, very large on the thick stems and much smaller and crowded on the leaf- and flower-stalks. This rose is the eglantine of the poets (with the exception of Milton, who, when he referred to it probably had the honeysuckle in mind).

I know a bank where the wild thyme blows,
Quite over-canopied with luscious woodbine,
With sweet musk-roses and with eglantine.

A Midsummer-Night's Dream, Act II, Sc. 1 : SHAKESPEARE

The leaflets are doubly serrated and hairy beneath. Collectively they emit a seductive fragrance from glands in their under-surfaces. For this reason alone the species is sometimes cultivated.

Wild-rose, Sweet-briar, Eglantine,
All these pretty names are mine,
And scent in every leaf is mine,
And a leaf for all is mine,
And the scent — oh, that's divine!
Happy, sweet and pungent-fine,
Pure as dew and picked as wine.

Songs of the Flowers: LEIGH HUNT

The flowers are slightly darker than those of the wild rose. The styles are quite free, that is, they are not united in the form of a column.

The trailing or field rose (*R. arvensis*) of hedges, woods and fields, exhibits its flowers during the same short season as the others, but in this species they are white and scentless. The hooked prickles enable the long slender stems to trail along the ground.

Roses have in times past been used for making various drinks and dishes. Vinegar of roses is prepared by steeping the petals in vinegar; that made from pink roses is astringent, that from white, laxative. Rose-petals are sometimes also put in salads and preserves. Pickled rose-buds were popular during the seventeenth century. Eglantine sauce was served at Balmoral during Queen Victoria's time; it was prepared from the hips of sweet briar or eglantine.

Apart from the wild (dog) rose being considered to be a cure for mad-dog bite, roses have in the past also played other parts in magic and medicine.

The Devil is mortally afraid of roses and crocuses,
Of roses, that is, growing wild.

Fors Clavigera: RUSKIN

Crato prescribes the condite fruit of wild roses, to a nobleman his patient, to be taken before dinner or supper, to the quantity of a chestnut. It is made of sugar, as that of quinces.—*Anatomy of Melancholy*: R. BURTON

Some of these briars stretch forth into the meadow, and then, bent down by their own weight, form an arch crowned with flowers. There is an old superstition about these arches of brier hung out along the hedgerow: magical cures of whooping-cough and some other diseases of childhood can, it is believed, be effected by passing the child at sunrise under the brier facing the rising sun.

Wild Life in Southern Counties: JEFFERIES

Among other climbers, twiners and ramblers all of which help to canopy the hedgerows with dense foliage in June, the two bryonies, the white (p. 220) and the black (p. 220), are still in bloom; but there are newcomers so far as flowers are concerned, though most of them have

already reached fairly mature vegetative growth and are covered with green foliage.

One is the woody nightshade or bittersweet, a member of the genus *Solanum* of the family SOLANACEAE, Dicot. (p. 289). Woody nightshade is *S. dulcamara*, from the Latin *dulcis*, sweet, and *amarus*, bitter, for the fairly poisonous berries are at first bitter and then sweet (*Plate 10*). It is frequently but erroneously called deadly nightshade (p. 289).

Woody nightshade is a perennial climber favouring hedgerows, thickets and open woods, and presenting its small but beautiful purple flowers during June to August. (A very closely related, but smaller trailing species, *S. maritimum*, grows on shingle and blooms from June to November.)

The large green leaves have three main, heart-shaped, but very pointed lobes (p. 578); there are frequently smaller lobes farther down the stalk.

The flowers are borne in drooping clusters, each having a short individual stalk. The flower is very typical of the genus *Solanum*, to which black nightshade, potato and tomato also belong. There are five green sepals united in the form of a tube with five prominent teeth at its rim. The five large purple petals form a tube at their bases, but the five long and pointed segments spread out in campanulate fashion. At the base of each segment are two green spots. The five stamens have exceptionally large anther-heads which are loosely joined to form a prominent golden yellow cone. The two carpels are fused to form a two-chambered ovary containing many seeds. The fruit is a red berry (p. 577).

We are now impelled by the beautiful great or large bindweed to meet another family, the CONVULVULACEAE, Dicot., a temperate and tropical family of herbs and shrubs, but very few trees. This family is closely related to the SOLANACEAE. To it, the American sweet potato (*Ipomoea batatas*) belongs, but no members of this genus are indigenous to Britain, though ornamental species are cultivated. The family is represented, however, in Britain by very familiar plants—great or large bindweed (*Plate 10*) and small or corn bindweed. The parasitic dodders are also members. Altogether the family is not heavily represented in Britain.

The two bindweeds are very similar in appearance, apart from size. Though the great bindweed prefers climbing over hedges, it also often occurs as a weed, suddenly appearing over garden railings, trellis work, wire fences and even garden shrubs; but it must be admitted that the small bindweed is a much more troublesome weed (p. 361). In spite of their obvious similarities, the two bindweeds are sufficiently different to warrant two separate genera. Great bindweed is a member of the genus *Calystegia* (*C. sepium*). The generic name reflects a distinctive character of the plant, for it is a contraction of the Greek *kalykostegia*, from *kalyx*, a cup, and *stegē*, a cover; the calyx being enclosed in two enormous



bracts. The great bindweed was at one time included in the same genus as the small, namely, *Convolvulus*: but it seems certain that it was the great species to which Pliny referred when describing a certain beautiful white flower:

There is an herb named in Latin *Convolvulus* (*i.e.* with wind), growing among shrubs and bushes, which carrieth a flower not unlike to this Lilly, save that it yieldeth not smell nor hath those chives within; for whiteness they resemble one another very much, as if Nature in making this flower were a learning and trying her skill how to frame the Lilly indeed.—*Historia Naturalis*, Bk. 21: PLINY

Bindweeds in the past have also been called withwind, withy-wind, woodbine, hedge-bell and rope-bind.

The white flowers of great bindweed are certainly of the most dazzling brightness; furthermore they are among the largest of indigenous British flowers. Sometimes attractive pink varieties are to be found; these latter are fairly common around Oxford. Pliny was also correct about the flower's lack of scent, yet it is pollinated by insects — mainly hawkmoths. In this respect it differs from the small bindweed, for that is sweetly perfumed.

The Americans also have to tolerate these two bindweeds as garden pests. They call the great bindweed, hedge bindweed; the small they sometimes call creeping Jenny, a name which the British give to quite a different plant, the moneywort (p. 386), which, in turn, the Americans call creeping Charlie. In the United States there are also the morning glories, members of the same family with similar flowers, but belonging to the sweet potato genus (*Ipomoea*). These also are weeds in the New World; but in Britain, at any rate, one species of morning glory is favoured as a garden climber, though it is usually called *convolvulus*. There are several varieties of it of varying colour — deep blue, pale blue, mauve, blue striped with white, and so forth.

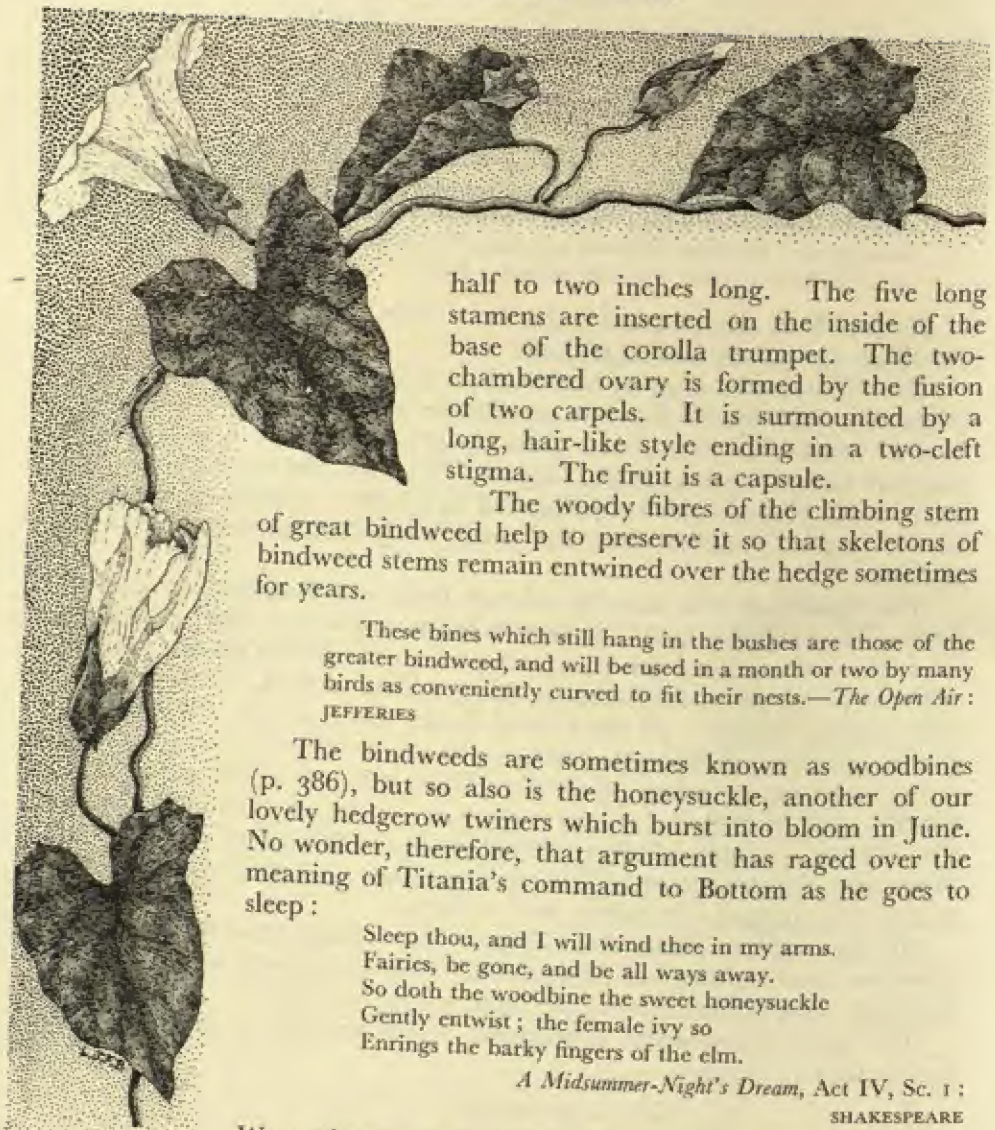
All these plants climb their supports by twining around them, and persistent climbers they can prove to be. They twine in an anti-clockwise direction; thus differing from the honeysuckle (p. 308).

The great bindweed is a perennial which displays its large flowers during June to August.

On a sudden a low breath
Of tender air made tremble on the hedge
The fragile bindweed-bells and briony rings.

The Brook: TENNYSON

It can twine many yards unless checked. Its handsome dark leaves are more or less arrow-shaped. Each floral trumpet is borne on a long stalk and supported by five pale-green, pointed, overlapping sepals, but these are scarcely visible since they are enshrouded in two large green bracts which are often tinged with brown or red. The five large white (sometimes pink) petals are united to form a five-angled trumpet one and a



GREAT BINDWEED

half to two inches long. The five long stamens are inserted on the inside of the base of the corolla trumpet. The two-chambered ovary is formed by the fusion of two carpels. It is surmounted by a long, hair-like style ending in a two-cleft stigma. The fruit is a capsule.

The woody fibres of the climbing stem of great bindweed help to preserve it so that skeletons of bindweed stems remain entwined over the hedge sometimes for years.

These bines which still hang in the bushes are those of the greater bindweed, and will be used in a month or two by many birds as conveniently curved to fit their nests.—*The Open Air*:
JEFFERIES

The bindweeds are sometimes known as woodbines (p. 386), but so also is the honeysuckle, another of our lovely hedgerow twiners which burst into bloom in June. No wonder, therefore, that argument has raged over the meaning of Titania's command to Bottom as he goes to sleep:

Sleep thou, and I will wind thee in my arms.
Fairies, be gone, and be all ways away.
So doth the woodbine the sweet honeysuckle
Gently entwine; the female ivy so
Enrings the barked fingers of the elm.

A Midsummer-Night's Dream, Act IV, Sc. 1:
SHAKESPEARE

Were there commas after the words 'woodbine' and 'honeysuckle' it might be that Shakespeare was placing emphasis on the one plant by using both its names. But it seems more likely that here the word 'woodbine' indicates bindweed, for that tenacious twiner might well encircle any honeysuckle which happens to be near.

Fortunately today the name honeysuckle and not woodbine is more often used for that lovely sweet-smelling twiner so beloved of cottage gardeners yet so common in the wild state. It is another member of the



Harold Bastin

HONEYSUCKLE

elder family (CAPRIFOLIACEAE, Dicot., p. 163) and belongs to the large cosmopolitan genus *Lonicera*. There are three British species of this genus, but only *L. periclymenum*, the common honeysuckle, is likely to be encountered by most people. The generic name was given in honour of A. Lonicer, the sixteenth-century German botanist. The specific name indicates its twining habit, for it is from the Greek *peri*, around, and *klymenon*, a tendril, though there are no tendrils in this plant. It is a shrubby twiner which grows over hedges, twining around supports in a clockwise direction (thus differing from the bindweeds). It often twines so tightly that at times it indents the bark of the support, leaving a permanent spiral groove (p. 310).

Honeysuckle blooms over a long period — from June to September.

The fairly small, simple broad leaves are borne in opposite pairs, each pair lying in a plane at right angles to the next. The margins of the leaves are not serrated but they are sometimes lobed. They are among the first to break bud in the year for, like those of the wayfaring tree, they are not protected by bud-scales.

The sweet-scented flowers are borne in terminal heads, each flower being sessile. They are yellow, yellowish-pink or red, though all of them are red when in bud (*Frontispiece*).

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Harold Bastin

HAZEL STEM DISTORTED BY
TWINING HONEYSUCKLE

And bid her steal into the pleached
bower,
Where honeysuckles, ripen'd by the
sun,
Forbid the sun to enter, like favourites,
Made proud by princes, . . .

Much Ado about Nothing, Act III,
Sc. 1: SHAKESPEARE

There is a small, five-toothed calyx. The petals are united to form a long, narrow tube which gapes at the distal end into two large lobes, the upper erect and slightly notched into three segments, the lower strap-shaped and curving downwards and inwards. The five stamens and the longer style project beyond the corolla mouth. Much nectar is secreted at the base of the corolla tube, and pollination is effected by long-tongued night moths which are attracted by the strong night scent of the flowers.

Good Lord, how sweetly smells the honeysuckle
In the hush'd night, as if the world were one
Of utter peace, and love, and gentleness.

Gareth and Lynette: TENNYSON

The flower has an efficient mechanism for ensuring cross-pollination.¹ The stamens split and expose their dry pollen just as evening approaches, then the flower moves into a horizontal position. At first the style curves downwards, and the visiting moth alights on the stamens while it forces its long tongue down the tube to get at the nectar at the bottom. Then the moth departs. After this the style gradually assumes a horizontal position and the stamens wither. All this happens before the next evening approaches, for by then more flowers in the head have opened and are ready for the moths. Thus when the moth alights on a flower with its style in the right position the stigma touches that part of its body bearing pollen from another flower.

The fruits are massed in small dense heads, for individually they have no stalks, having derived from sessile flowers. They are bright red poisonous berries (p. 579).

No one in Britain could look upon the honeysuckle as a weed, yet in

¹ *Flowers in Britain*, p. 205.

the United States there is one, the Japanese honeysuckle (*L. japonica*), which grows over shrubs so solidly and has caused such widespread depredation that in parts it is loathed.

UNDERGROWTH OF HEDGES

STINGING nettles, pests to the farmer and gardener, nuisances to the country Rambler, in fact, friends of no one, produce their dull, unattractive flowers during June to September. They are a nuisance above ground because they sting; and a pest below ground (at any rate some species) because they have long, persistent underground stems. They are universally disliked because they can grow almost anywhere, even in towns, but they favour hedgerows, waste places and cultivated ground.

The stinging nettle only
Will still be found to stand.
The numberless, the lonely,
The thronger of the land,
The leaf that hurts the hand.

It thrives come sun, come showers,
Blow east, blow west, it springs;
It peoples town and towers
Above the courts of kings,
And touch it and it stings.

The Stinging Nettle: A. E. HOUSMAN

Stinging nettles belong to the family URTICACEAE, Dicot., a temperate and tropical family of herbs and shrubs among which are some useful fibre-yielding plants. Nettles themselves have strong woody fibres which at one time were extracted for making fabrics (see p. 314). Within the family there are some genera of plants which do not sting, and among these *Humulus* (hop, p. 426) and *Parietaria* (pellitory-of-the-wall, p. 383) are British. Several genera contain stinging plants, some of the non-British genera being very violent though there are those who would claim that stinging nettles themselves are violent enough. One of the stinging genera is *Urtica*, and to this stinging nettles belong. The name is Latin for nettle, from *uro*, to burn.

The stinging mechanism of nettles is situated on the mature leaves

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and on the younger parts of stems. Each takes the form of a single, large, bulbous cell embedded in the surface layer of the leaf (or stem) which tapers out as a hair at right angles to the surface and terminating in a point. The tapering hair is hollow and the point itself contains silica and is therefore very brittle. The bulbous part at the base contains the poisonous liquid which is a protein of unknown composition — it is not formic acid as is sometimes stated. When gently touched, the brittle part of the hair is broken off, the sharp hair penetrates the skin, and the pressure thus set up on the bulbous base forces the poisonous liquid up the hair and into the wound. Only a gentle touch is necessary; if the hair is suddenly and roughly handled, then not only is the brittle tip broken off but also the hair itself or at least the latter is suddenly bent over and thus rendered ineffective.

Tender-handed stroke a nettle,
And it stings you for your pains ;
Grasp it like a man of mettle,
And it soft as silk remains.
'Tis the same with common natures ;
Use 'em kindly, they rebel ;
But be rough as nutmeg-graters,
And the rogues obey you well.

Verses Written on a Window in Scotland : AARON HILL.

Dock leaves (p. 463) are supposed to be a cure for nettle stings ; this has never been my experience though I have found relief in the cooling effect of the large leaves.



Ernest G. Neal

COMMON STINGING NETTLE

Of the thirty-odd species belonging to the genus *Urtica* three are British, and all three are stinging nettles. The most likely to be encountered is the common stinging nettle (*U. dioica*), a perennial growing one to six feet high in hedgerows, woods, fields, waste places, etc., and flowering during June to September. The specific name is from the Greek *di*, two, and *oikos*, house, indicating that there are two kinds of flowers — male and female — which are borne on different plants. All nettles are unisexual, but not all thus segregate their sexes. Though the common stinging nettle is such a nuisance, it

must be admitted that vegetatively it is not unattractive. The tall, rough, longitudinally ridge stems bear the leaves in opposite pairs. Each leaf has a long leaf-stalk at the base of which is a pair of small, lance-shaped stipules. The large leaf-blade is heart-shaped though drawn out to a long, pointed apex and having sharp marginal teeth.

The male flowers grow in long pendulous inflorescences which are borne in the axils of the leaves. Each small flower is very insignificant for it has no petals, but there are four small, greenish sepals and four stamens. The flower has an efficient method of ejecting its pollen into the atmosphere (for the plant is wind-pollinated). The stamens when in the flower-bud are bent; but as they ripen and the flower opens they suddenly become erect and at the same time the anther-heads turn inside out thus throwing the dry pollen grains far and wide. (Another genus of this family, *Parietaria*, also has stamens which behave in another rather violent fashion, p. 383.) The female flowers, which grow on separate plants, are borne in denser, less pendulous inflorescences. Again, here each flower is insignificant and very small, having one to three sepals, no petals, and a single carpel bearing a brush-like stigma well formed to catch the air-borne pollen. The fruit is a dry achene.

The small nettle (*U. urens*, the specific name having the same derivation as the generic, p. 312) grows only nine inches to two feet high. It differs also from the common nettle in that it is an annual and therefore not such a troublesome weed; furthermore its male and female flowers are borne on the same plant, sometimes even in the same inflorescence.

The Roman nettle (*U. pilulifera*, from the Latin *pilula*, a small ball, and *fero*, to bear, for the fertilised female flowers are borne in globular heads) is a much rarer species, but its sting is more painful. It flowers in similar places and during the same season as the others. William Camden, writing during the sixteenth century, claimed that the Romans brought nettle seeds to Britain in order that they could use sprays of the plant for chafing their cold limbs (an understandable, though drastic, precaution for south Europeans to take when visiting Britain). It was probably the Roman nettle to which Camden was referring.

Some country-folk gather young nettles and prepare them like cooked spinach. They are very nutritious. An infusion called nettle tea is sometimes also prepared



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ROMAN NETTLE

Left, male inflorescences; right, female inflorescences

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because it is considered to have medicinal value; in fact, at one time, nettles were highly prized by herbalists. But today, even in the countryside, the consumption of nettles is fast dying out. The fibres of the stem are no longer extracted, though there were times when they were considered of excellent quality for making fabrics.

In Scotland I have eaten nettles; I have slept in nettle-sheets, and I have dined off a nettle tablecloth. The young and tender nettle is an excellent pot-herb, and the stalks of the old nettle are as good as flax for making cloth. I have heard my mother say, that she thought nettle cloth more durable than any other species of linen.—*Letters from the South*: T. CAMPBELL

Among other flowering herbs appearing in hedgerows and on banks for the first time during June is the stiff, awkward, unattractive, hedge mustard, a member of the CRUCIFERAE, Dicot. (p. 95). It also thrives along waysides. It belongs to the genus *Sisymbrium* (*S. officinale*) — the generic name being derived from the Greek *sisymbria*, a herb sacred to Venus, though it is scarcely likely that it is sacred to anybody these days, for it is neither useful nor ornamental. It is a biennial attaining a height of one to three feet, and displaying its small yellow flowers during June and July. The plant is hairy. The many radical leaves are something like those of the dandelion in that they have large, backwardly pointing lobes, but in this case the lobes themselves are irregularly serrated. There are erect and horizontal stems, and the leaves on these are smaller.

The genus *Sisymbrium* is very near *Erysimum*, of which the garlic mustard (p. 223) is a member, and this close relationship is reflected in the inflorescence and flower which are alike in both genera, though the inflorescence of hedge mustard is usually longer and the flowers are yellow. Each flower is typically cruciferous, and the fruit, a siliqua, is like that of the wallflower (p. 182).

The pea family (LEGUMINOSAE, Dicot., p. 95) is represented in the June hedgerows by one of the *Vicia* vetches (p. 225), namely the very common but beautiful tufted vetch (*V. cracca*). The specific name is Latin for pulse, the seed of another leguminous plant. This vetch is quite typical of the genus, and is a climber, sometimes scrambling for yards over the undergrowth and up the shrubs of the hedgerow. The leaves have anything from seven to a dozen pairs of lateral leaflets, but they terminate in a few fine but strong tendrils by means of which the plant climbs. The blue flowers, which appear until August, are tufted into dense, one-sided axillary inflorescences.

In April a weed, the field madder (p. 181), introduced us to the bed-straw family (RUBIACEAE, Dicot.). Again in May, the more charming sweet wood-ruff (p. 215) reintroduced the family. Now we meet an even more common member of the family, namely, goosegrass. But this

belongs to still another genus, that is, the bedstraw (p. 334) genus itself, *Galium*. This name is from the Greek *gala*, milk, for the leaves of some of the species were used for curdling milk. Goosegrass is *G. aparine*, from the Greek *apairo*, to lift off, for its fruits are easily — all too easily (see below) — removed from the plant when they are ripe. The common name goosegrass refers to the fact that geese like this plant; in fact, country poultry-keepers often boil it with a mash to feed to poultry, especially geese and turkeys.

Goosegrass is a very common annual in hedges, often forming tufted masses sending up longer shoots which scramble over the hedges for distances up to six feet. This is made possible by many small hooks present on both stems and leaves. The small flowers appear during June to September.

The leaves, like those of other genera so far met, are unusual in that they are borne in whorls, six to eight small narrow leaves to each whorl. From the axil of each whorl two branches sometimes emerge and these bear the inflorescences each of which contains three to eight small white flowers.

The four sepals of the flower are united to form an untoothed ring. The four white, pointed petals spread, but they are slightly united at their bases. There are four stamens which alternate in position with the petals, and two carpels united to form an ovary having two separate styles. The nectar of the flower is freely exposed. The fruit is interesting (p. 35), for it is covered with recurved hooks with which the easily detachable fruit clings to any rough browsing animal and thus steals a ride for wide distribution. Country rambblers must often have had these tenacious fruits, sometimes called 'bobby buttons' and 'kisses', clinging to their clothes. The shoots also cling tenaciously by means of their climbing bristles. This persistent plant is sometimes called



GOOSEGRASS, SHOWING LEAVES,
FLOWERS AND FRUITS

Bottom right, flower



Ernest G. Neal

GOAT'S BEARD

Showing closed flower-heads and fruit 'clocks'

cleavers or sticky Willie for that reason. At one time the seeds were used as a substitute for coffee.

The handsome goat's beard (COMPOSITAE, Dicot., p. 126) grows in the long grass of hedge-rows, meadows and along waysides, displaying its yellow flower-heads during June and July. It is a member of the genus *Tragopogon* (*T. pratensis*), of which the only other member indigenous to Britain is the salsify (*T. porrifolius*, p. 263).

Goat's beard, unlike salsify, is a biennial, growing one to two feet high. Its grass-like leaves are similar to those of salsify. Also some of the involucre bracts surrounding the yellow flower-head are extremely long and pointed, usually stretching beyond the yellow flower-straps themselves. All the flowers are ligulate (p. 131) and the greyish fruiting

'clock' is a particularly handsome one. The extraordinary composite closes its flower-head very early in the day; usually about midday, no matter what kind of weather is prevailing at the time, and that is why it is sometimes known as Jack-go-to-bed-at-noon (Plate 10).

Another member of the COMPOSITAE, Dicot., is the rather unattractive bristly ox-tongue which presents its yellow flower-heads in shady hedge-rows, etc., during June to October. It belongs to the genus *Picris*, a small genus distributed over Mediterranean, western Asiatic and north-eastern African regions, but represented in Britain by two species only. The name is derived from the Greek *pikros*, for its roots are very bitter. Bristly ox-tongue is *P. echinoides*, from the Greek *echis*, viper, for the plant is covered with bristles.

It is not difficult to identify this bushy annual which grows two to three feet high, mainly on account of the small bristles on stems, leaves and involucre bracts. The radical leaves are lance-shaped with unserrated margins. The leaves borne on the stems are sessile and very

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broad at the base, encircling the stem at the axil. Each bristle, especially if situated on either surface of the leaf, emerges from a small white spot.

There are two whorls of bristly bracts making up the involucre which surrounds the yellow flower-head. The outer whorl is composed of five large heart-shaped bracts; the inner of eight longer, lance-shaped bracts. All the yellow flowers are ligulate (p. 131).

Among June newcomers, the family UMBELLIFERAE, Dicot. (p. 165), is represented by rough chervil — not to be confused with chervil (p. 243), also an umbellifer. Rough chervil is the only British representative of the fairly large north-European genus *Chaerophyllum* (*C. temulum*). This biennial plant frequents hedges and woods, growing one to four feet high. Its beautiful leaves, composed of deeply cut lobes like those of many umbellifers, turn a beautiful purple colour later in the year; this is reflected in the generic name which is derived from the Greek *chairō*, to rejoice, and *phyllon*, leaf, for the leaves of this plant are exceptionally beautiful. The specific name is from the Latin meaning drunken or causing vertigo.

The white flowers are borne in typical compound umbels and appear during June and July. The entire compound umbels droop while the young flowers are still in bud. The petals of each flower are of unequal size. The fruit is typical of the family but fairly long, though not so long as that of chervil (p. 243).

In some hedgerows and on the borders of fields, the rampant or ramping fumitory may be found, but it is of rather localised distribution. It blooms during June to September. It belongs to the fairly simple family FUMARIACEAE, Dicot., which has already introduced itself through corydalis (p. 295). But even now we have not met a truly common member of the family, so detailed consideration will be left until we do (p. 358).

Rampant fumitory, like common fumitory (p. 358), belongs to the genus *Fumaria* (*F. capreolata*). The specific name reflects the climbing habit of this plant for it is derived from the Latin *capreolus*, tendril, though this plant does not possess tendrils, climbing and clinging to its supports by curving its leaf-stalks around them just as clematis (p. 425) does.

The flowers are usually pink or cream tipped with purple, though there is one curious variety whose flowers are white at first which then turn carmine after pollination.

OTHER FLOWERS WHICH MAY APPEAR IN HEDGEROWS DURING JUNE

(The number following each flower is the page on which it is mentioned or described)

Agrimony, 344
Avens, Wood, 287
Bryony, Black, 220

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Campion, Red, 223
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Crane's bill, Stinking, 224	Mallow, Common, 348
Daisy, 127	Mustard, Garlick, 223
Dandelion, 129	Mustard, Treacle, 361
Deadnettle, White, 222	Parsley, Wild beaked, 167
Foxglove, 284	Pea, Yellow, 331
Fumitory, Common, 284	Periwinkle, Greater, 163
Gladdon, 212	Speedwell, Germander, 227
Hemlock, 291	Stitchwort, Greater, 157
Herb, Robert, 224	Strawberry, Wild, 228
Horehound, Black, 354	Strawberry, Wood, 227
Iris, Stinking, 212	Vetch, Bush, 226
Ivy, Ground, 158	Vetch, Hedge, 226
Jack-by-the-hedge, 223	Violet, Dog, 154

32

FIELD AND MEADOW GRASSES

AT this time of year grass is not usually so lush and green as it often is during the moister months of the year, though even now in this country the fields are seldom so parched and devoid of grass that they lose their greenness entirely. But in many parts the dark-green flat carpet effect is missing, for the grasses have now grown up and are displaying their flowering shoots, and where it is needed the grass is fit for mowing. It is, nevertheless, important to realise that scarcely ever throughout the year do the fields, meadows and hills actually lose their greenness — a real characteristic of Britain and one for which she is well known; indeed something which has at times been the cause of astonished comment from foreign visitors.

Look, where clothed in brightest green
Is a sweet Isle, of Isles the Queen;
Ye fairies, from all evil keep her.

Peter Bell: Prologue: WORDSWORTH

Those who have travelled, especially to parts of the Middle and Far East, must have often noticed that general lack of a green carpet such as Britain can boast. Even in the most carefully tended parks and gardens of the beautiful eastern cities the so-called grass plots are sometimes sad to behold. Not even extravagant watering can save them from sometimes disappearing altogether; the few bowling greens of Cairo, and other

JUNE

Middle and Far Eastern cities, for example, must cost a fortune in periodic flooding.

Yet, withal, most of us know little about grasses except that they form the green carpets of fields and meadows, hills and downs, parks and gardens, which we seem to accept as a natural right. Perhaps the casual acceptance of the fact is the cause of our indifference. It is certainly one of the causes, but not the only one, of our ignorance. One can forgive Samuel Johnson's comment on his lack of knowledge :

A blade of grass is always a blade of grass, whether in one country or another.

Anecdotes of Johnson : MRS. PIOZZI

for he was notoriously careless in his observations and descriptions of Nature. Very recently an erudite colleague and friend expressed surprise and astonishment when I was able to prove to him that grasses are flowering plants. And the British are not alone in their aloofness or placid acceptance of their ignorance of grasses. Walt Whitman was no better.

A child said *What is the grass?* fetching it to me with full hands;
How could I answer the child? I do not know what it is any more than he.

Song of Myself : WALT WHITMAN

Grass is always with us, yet most of us know little about its botany, so that may explain the dearth of poetic praise in English literature.

We say of the oak, "How grand of girth!"
Of the willow we say, "How slender!"
And yet to the soft grass clothing the earth
How slight is the praise we render.

The Grass : EDGAR FAWCETT

But lack of knowledge of grasses is not confined to non-botanists, for many, indeed most, botanists, even plant systematists, do not find it easy to identify them unless they happen to be specialists in this group, and there are very few of these. Grasses anyhow belong to one of the most difficult families, namely, GRAMINEAE, Monocot. (p. 170). So it is evident there can be no hope of remedying the position here, for the study of grasses is certainly a specialised one, and such detailed examination could not be justified in a general survey of the country's flora such as this. All the same, the lack of regard for the beauty of grasses is inexcusable. There is much to appreciate in individual plants (though much to deprecate in such pernicious weeds as couch grass, p. 371). If any one takes the trouble of arranging a vase of freshly gathered mixed summer grasses, he or she will be astonished at the resulting æsthetic effect, for there are grasses of all types, and of many varying shades of green.

As botanists, however, we can only focus our attention on some of

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the most common examples of British grasses. Those who are particularly interested must consult a Flora for further details and still further examples.

The first grass, the meadow foxtail, was described on p. 172. There, the family — one of the most important, botanically and economically, of all flowering-plant families — was also discussed; and the structure of a typical grass was described too. For detail, that must suffice. More grasses are referred to in other parts of the book according to distribution or season of flowering. In June, many grasses of field and meadow are opening their flowers for the first time; the following are some of the most common.

Smooth or common meadow grass (*Poa pratensis*, generic name from the Greek for a fodder grass) is a perennial growing one to two feet high and having spreading panicles of flowers (p. 321, *I*). Wood meadow grass (*P. nemoralis*) is somewhat taller and grows in woods and shady places. Annual meadow grass (*P. annua*) is much smaller, growing three to twelve inches high, and that species appears in all sorts of places. All these grasses flower during June and July.

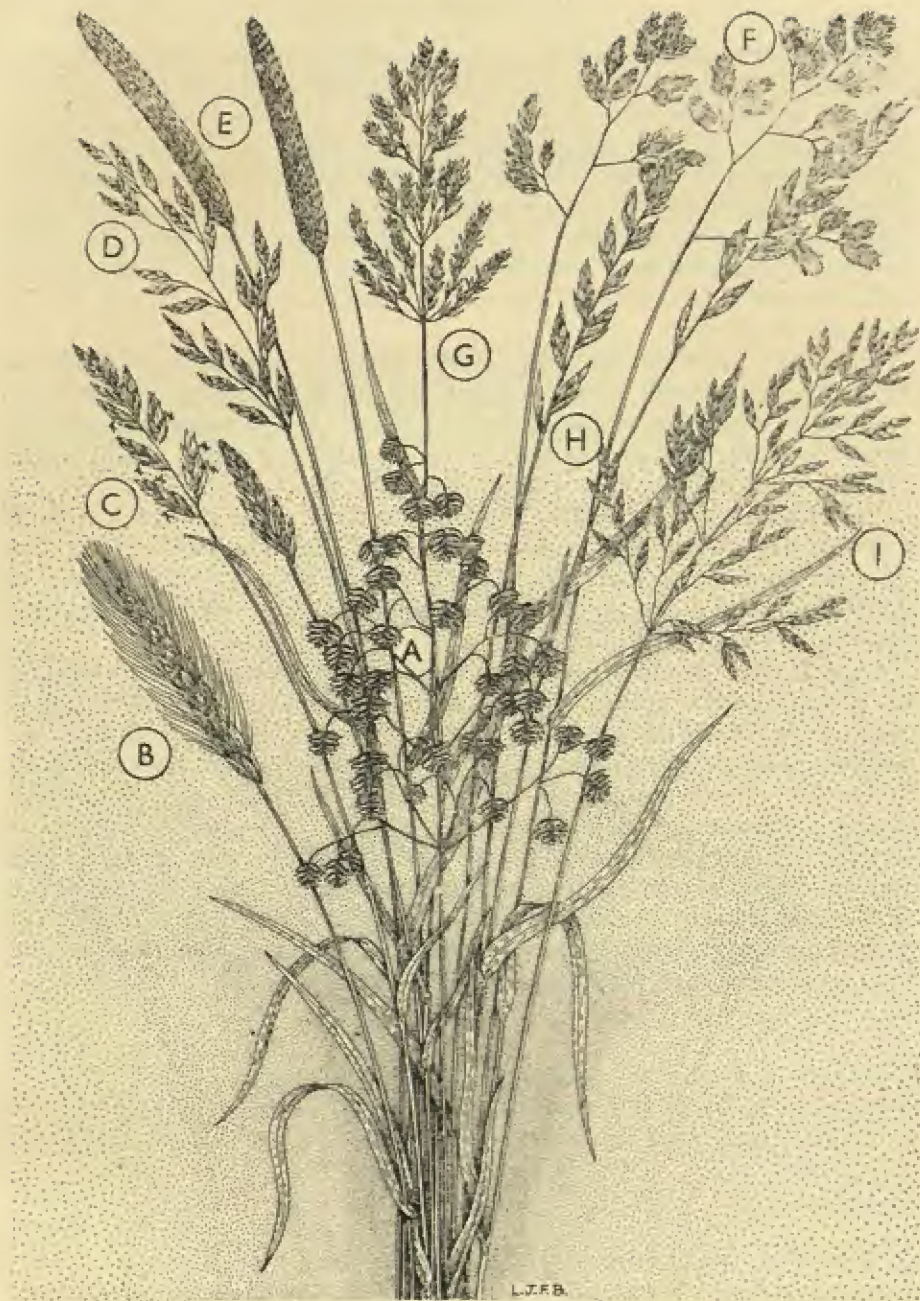
Sweet vernal grass (*Anthoxanthum odoratum*, generic name from the Greek *anthos*, flower, and *xanthos*, yellow, since the yellow stamens are very pronounced) is a pasture perennial reaching a height of six to eighteen inches. Here the spikelet and flower are unusual, for each of the former contains two neuter flowers with awns and one perfect hermaphrodite flower having two stamens only (but these stamens have very pronounced yellow anther-heads) and no awn. The specific name indicates the pungent scent of this species; even in the fresh state it smells like new-mown hay. It flowers during June and July (p. 321, *C*).

Meadow barley (*Hordeum pratense*, generic name from the Latin for barley) is a perennial preferring moist pastures and growing one to two feet high. As in cultivated and other wild barleys, the spikelets are arranged in groups of three on a long dense axis. Usually only one of each of the three spikelets is fertile. The exterior palea end in the familiar long awns. This grass perennates and spreads by means of strong root-stocks. It flowers during June and July (p. 321, *B*).

Perennial rye grass (*Lolium perenne*, generic name from the Latin for grass or weed) is easily identified, for the spikelets are arranged alternately in a two-ranked spike. This perennial grows one to two feet high and flowers during June and July (p. 321, *H*).

White bent grass or fiorin (*Agrostis alba*) flowers from June to August. The generic name is the Greek for a certain grass which was probably not this one at all but what is now recognised as *Agropyron* (p. 371). White bent grass is fairly tall, growing one to three feet high and flowering during June to August. The flowers are borne in panicles, though the lower part of each panicle-stalk is free from flowers (p. 321, *G*).

Some of the fescue grasses (*Festuca*, from the Latin for straw) are very common indeed. They are of rigid habit. Meadow fescue (*Festuca*



SOME JUNE GRASSES

A, quaking grass; *B*, meadow barley; *C*, sweet vernal grass; *D*, meadow fescue; *E*, timothy grass; *F*, cock's-foot; *G*, white bent; *H*, perennial rye grass; *I*, smooth meadow grass

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pratense) grows one to two feet high and blooms during June to August. Its stalked, nodding panicles are borne usually two, one long and one shorter, to each node. This species prefers good pastures (p. 321, *D*). Tall fescue (*F. elatior*) prefers damper places and stiff soils. It sometimes grows along river banks. It is especially tall, growing three to six feet high, and blooming during June to August. Some species of *Festuca*, especially those which grow in more exposed positions, have a curious method of reproduction. Small leafy shoots grow in place of the spikelets and these produce adventitious roots. Eventually the shoots fall off and take root in the soil.

Timothy grass or cat's tail (*Phleum pratense*, generic name from the Greek *phleos*, a marsh grass — though this one flourishes in meadows and waysides), is another easily identified species. It is a perennial, growing one to four feet high and flowering during June and July. The panicles take the form of long, close cylinders (p. 321, *E*).

Cock's-foot grass (*Dactylis glomerata*) is a valuable pasture perennial growing one to four feet high and flowering during June to September. The panicles are distinctly branched like the fingers of the hand (the generic name is from the Greek *daktylos*, a finger). The spikelets form dense tufts (p. 321, *F*).

Quaking or quake grass (*Briza media*) is one of the most beautiful of all British meadow grasses. It is a perennial growing six to twelve inches high and flowering during June and July. The reddish-brown triangular, awnless spikelets droop and quiver at the ends of thin graceful stalks, hence the common names, and the more localised ones — shivery shakes, tottering grass and doddering grass (p. 321, *A*). The generic name also signifies this characteristic, for it is from the Greek *brizo*, to nod. The specific name has been given to the common species to distinguish it from a larger and a smaller species, but both these are rare. The large quaking grass (*B. maxima*) is confined to Jersey; the small (*B. minor*) to cultivated ground in parts of south-east England.

FIELDS, MEADOWS AND PASTURES

(Except Grasses)

If fields are prisons, where is Liberty?

The Farmer's Boy (Autumn) : ROBERT BLOOMFIELD

Ye field flowers ! the gardens eclipse you, 'tis true ;
 Yet, wildings of nature ! I dote on you,
 For ye waft me to summers of old,
 When the earth teem'd around me with fairy delight,
 And when daisies and buttercups gladden'd my sight,
 Like treasures of silver and gold.

Field Flowers : T. CAMPBELL

ACCORDING to Plato (in *Phaedrus*), Socrates, in explaining why he seldom left the city, said : " Fields teach me nothing, but the people in the city do ". It seems that even Socrates had missed much and lacked some valuable learning. Fields, meadows and pastures are full of good things in June ; the vegetation is luxuriant and much of it is blooming for the first time in the season. At this time of the year therefore it is necessary more than ever before to be selective, without, it is hoped, omitting any plant of importance or special interest.

Most plants are at their happiest, for the natural conditioning factors such as temperature, light intensity and length of daylight, are at their maximum, and this often means that a plant is not always confined to its normal habitat but frequently appears in surroundings which at any other time of the year would be intolerable to it. Certain meadow grasses, for example, also show themselves in the hedgerows, waste places and so forth. It will be necessary here, of course, to concentrate on the main habitat in each case.

Now that tall grasses are flourishing in fields, meadows and pastures, most of the other plants there must also grow tall in order to compete successfully with them. This is exemplified by the June representative of the buttercup family (RANUNCULACEAE, Dicot., p. 229), namely, the common buttercup (*R. acris*), for it is the tallest of all terrestrial species of *Ranunculus* with the exception of the spearwort (p. 387).

The common buttercup grows one to three feet high. It is perhaps the best representative of terrestrial buttercups or crowfoots (genus *Ranunculus*, p. 230). It is sometimes known as meadow crowfoot and upright crowfoot, and it displays its lovely yellow flowers during June to August.

The radical leaves of the common buttercup are palmately divided,



Ernst G. Neal

THE COMMON BUTTERCUP

severely alone by browsing cattle, sheep and other animals.

The largest of all flowering plant families, namely, COMPOSITAE, Dicot. (p. 126), is well represented in most June habitats, but by nothing more beautiful and arresting to the eye than the white moon-daisy which sometimes splashes whole fields with white, especially when the grass is just about ready for mowing. This plant also favours railway embankments and other places which are exposed to bright sunlight and covered with long grass (*Plate 11*).

And where high grasses wave
Shall great Moon-daisies blink.

The Idle Flowers : R. BRIDGES

Being a lover of sunshine, the flowers appear only during the summer months of June to August. This flower is also known as ox-eye daisy, dog-daisy or marguerite, and is certainly one of the most handsome of British wild flowers. In Scotland, whereas the common small daisy is often known as gowan, the moon-daisy is sometimes called horse-gowan.

usually into seven lobes, and each lobe is again divided into a few sub-lobes. Their sheathing bases are hairy. The leaves which subtend the flower-stalks on the upright stems are divided into fingers.

The yellow flower is very typical of buttercups (p. 19). In this case the sepals spread, and in that respect differ from those of the bulbous buttercup (p. 230) which are reflexed.

And though the fields look rough
with hoary dew,
All will be gay when noontide
wakes anew
The buttercups, the little chil-
dren's dower
— Far brighter than this gaudy
melon-flower.

Home Thoughts from Abroad :
BROWNING

Having an acrid juice, like most terrestrial buttercups, the common buttercup is left

The moon-daisy is a member of the genus *Chrysanthemum*, a large genus of world-wide distribution, but which is represented indigenously in Britain by about three species only (pp. 365, 431). The generic name is derived from the Greek *chrysos*, gold, and *anthemon*, flower, for most species have golden flowers. Though the moon-daisy is the wild progenitor of many large species and varieties of cultivated marguerite, garden chrysanthemums did not originate from it though they are of the same genus. Most of the latter are descended from the Chinese and Japanese wild chrysanthemums (those countries are the lands of the chrysanthemum), namely, *Chrysanthemum sinensis* and *C. indicum*. Furthermore, one of the main reasons why chrysanthemums are among the last of the season's flowers (blooming during autumn and winter) is that these flowers must have short daylight hours, whereas the wild moon-daisy must have the reverse. With these flowers, light intensity is probably more important than temperature.

The moon-daisy is *C. leucanthemum*, the specific name being of obvious significance, coming from the Greek *leukos*, white, and *anthemon*, flower. It is a stiff and sturdy perennial, growing from six inches to two feet high. The stems are slightly ridged longitudinally. The leaves are similar in shape to those of the common daisy, but they are more deeply serrated and their upper surfaces are very dark green. The radical leaves are stalked; the upper ones, sessile.

The beautiful flower-heads are about two inches in diameter, though some are much smaller, especially those appearing late in the season. They are constructed very much like those composites, such as the common daisy, which have both tubular and ligulate flowers (p. 131). The supporting involucre is composed of green, tightly overlapping bracts, each of which has a wide, brown, membranous margin. The yellow disk is made up of all tubular hermaphrodite flowers. The ray flowers form one circle only, and they are long and white, ligulate and female only.



Ernest G. Neal

MOON-DAISY

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Wraiths that the scented breath of summer raises,
Ghosts of dead hours and flowers that once were fair —
Sorrel of nodding grass and white moon-daisies —
Glimmer and fade upon the fragrant air.

The Lamp and the Lute: ROSAMUND M. WATSON

Though the moon-daisy is not considered a bad agricultural weed in Britain, American and Canadian farmers regard it as a pest and root it out whenever opportunity arises. This is not difficult for the plant is very shallow rooted.

On the other hand, another very beautiful member of the COMPOSITAE, Dicot., family, namely, ragwort, is most certainly an agricultural pest; in fact, it is doubtful if any farmer who is pestered by it would agree that it is beautiful, for he despises it, as well he might. It grows in pastures, usually the more hilly pastures and in those fields where the grass is short. Sometimes it colonises waste places, and all too frequently it invades cultivated land.

Foxglove and hemlock blossom in the garden
Where the bright ragwort tramples on the rose.

A Ruined Altar: ROSAMUND M. WATSON



Harold Bastin

RAGWORT INVADING MEADOW-LAND

JUNE

It is a persistent perennial growing one to four feet high and displaying its masses of yellow flower-heads during June to September, sometimes even later in the south.

The plants themselves are very gregarious, and that, together with the fact that the flower-heads are borne in dense clusters, frequently results in huge yellow patches of the weed carpeting fields and hillsides.

The sandy fields, leaping through flowery groves
Of ragwort.

The Prelude : WORDSWORTH

Ragwort belongs to the genus *Senecio*, an enormous cosmopolitan genus of about 1500 species of which about only a dozen (including groundsel, p. 98) are indigenous to Britain. Though all British species are herbs, within the genus there are plants of all kinds of habit such as climbers and others as large as trees but having fleshy stems since they inhabit desert areas. Ragwort is *S. jacobaea*. The generic name is explained on p. 99; the specific name is after St. James, the patron saint of horses, for this plant was at one time used in veterinary medicine. It is also known in some localities as St. James' wort; in others, because in days of old it was used for treating epilepsy and stuttering, it is known as staggerwort and stammerwort (*Plate 11*).

The leaves are simple but very deeply cut into lobes, and these lobes are still further notched. The lower lobes embrace the stem, for the leaf is sessile. The yellow disk flowers are tubular and hermaphrodite; the yellow ray flowers are ligulate but female only. Both have a pappus of hairs which supplant the calyx. The pappus develops still further on the fruit, thus giving the plant a hoary appearance, hence the generic name (p. 99).

Much more like the dandelion is the rough hawkbit, a yellow composite which grows in meadows and waste places and displays its fairly large open flower-heads during June to September. It belongs to the European and Asiatic genus *Leontodon* (*L. hispidus*). The leaves are very like those of dandelion in being all radical and deeply toothed with the main teeth pointing backwards, though in general these leaves are not so deeply toothed as the dandelion's, and the teeth are more regular. The common name of dandelion has a similar origin from the Latin (p. 129) as the generic name of rough hawkbit (*Leontodon*) has from the Greek (*leon*, lion, and *odous*, tooth, for the leaf margins are assuredly dentate). The specific name is Latin for bristly: the lower parts of the leaves and the entire flower-stalks and the bracts of the involucre are covered with bristly hairs.

Rough hawkbit is a perennial growing six to eighteen inches high. The stalk is not soft, juicy and hollow like that of the dandelion, but is rather tough. The flower-heads droop slightly when in bud. The



LONG-ROOTED CAT'S EAR

Bottom right, single flower

involucre of bracts is shaped like an inverted cone. All the yellow flowers are ligulate, and all, with the exception of the outer ring of flowers, have a hairy pappus.

The long-rooted cat's ear is another member of the COMPOSITAE, Dicot., in fact it is closely related and indeed similar to the rough hawkbit; but it is sufficiently different to warrant another genus, *Hypochaeris* (*H. radicata*). It is said that pigs relish this plant, and this is indicated in the generic name which is derived from the Greek *hypo*, under, and *choiros*, pig. All leaves arise direct from the root, that is, they are all radical; the specific name is the Latin reflecting this.

Long-rooted cat's ear flourishes in meadows where it is very common, and on pastures

and on heaths. It displays its yellow flower-heads during June to September. It is a perennial growing six to eighteen inches high and perennating by means of a long tap-root. The radical leaves are like those of the dandelion but the teeth are slightly blunted.

Unlike rough hawkbit, the entire plant is smooth, and the flower-stalks are branched, and widely dispersed on them in a spiral fashion are small bracts said to resemble cat's ears. The yellow flower-head is somewhat like that of rough hawkbit but smaller. All flowers are ligulate and have a hairy pappus, and the beautiful fruiting 'clock' is very like that of the dandelion.

Both in Britain and in the United States (where it is sometimes called false dandelion) the long-rooted cat's ear is a menace to cultivated ground in certain areas only.

One of the most lovely of British wild flowers is the field scabious which is now blooming in fields or on banks and even on cultivated ground. It is a member of the family DIPSACACEAE, Dicot., which is closely related to the COMPOSITAE because the small flowers are all congregated into a single dense head, though in the case of DIPSACACEAE this

floral organisation is not so complicated as the capitulum of, say, the moon-daisy. The family is native to north temperate, tropical and South African regions. The several species of wild scabious belong to the genus *Scabiosa*, an exclusively European genus. The origin of the generic name is doubtful.

Field scabious (*S. arvensis*) is a beautiful perennial raising its sky-blue and mauve flower-heads at the ends of long graceful stalks which might be anything from one to four feet high. These are at their best during June to August. Field scabious is quite as handsome as the many garden varieties which range in colours from white, through pastel shades of pink, salmon, blue and mauve, to deep red and purple.

The large radical leaves are lance-shaped and serrated. Those growing on the inflorescence stalks are deeply divided. The entire vegetative part of the plant is hairy.

The lovely flower-heads — sometimes two inches in diameter — bear outer ray flowers of a sky-blue shade, and these are surrounded by an involucre of green bracts. The disk flowers are smaller and mauve in colour; their golden stamens stand up bravely, thus giving the whole disk of flowers the semblance of a pincushion; in fact, the plant is sometimes called pincushions (*Plate 13*).

. . . or scabious tall
That country children call
Pincushions, with their gift
Of accurate observation and their swift
Naming more vivid than the botanist.

The Garden : V. SACKVILLE-WEST

The sepals of each flower form a small tube at the rim of which there are sixteen radiating teeth which form the pappus on the fruit which follows. The calyx itself is also surrounded by a few minute bracts. The four petals also form a tube. In the disk flower this tube has four small, equal pointed lobes at its rim. In the ray flower the four lobes are larger and of unequal size, two being larger and more spreading than the other two. In both types of flower there are four stamens. The two carpels are fused and the ovary is surmounted by a long, thin style which bears a cleft stigma at the top. The fruit is an achene crowned by the pappus. Cross-pollination is ensured by the simple expedient of the stamens ripening first.

The rose family (ROSACEAE, Dicot.) is also fairly well represented by herbs in meadows and pastures during June. There are, for example, the two burnets, which bloom during June to August. Both belong to the genus *Poterium* (from the Greek *poterion*, a cup, from the shape of the floral receptacle and calyx). There are three species of this genus in Britain, but only two are common. The lesser or salad burnet is

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P. sanguisorba (from the Latin *sanguis*, blood, and *sorbeo*, to absorb, for this plant was at one time used for staunching wounds). Salad burnet is a perennial growing six to eighteen inches high and favouring calcareous soils. The leaves are compound, each leaf-stalk having about seven or eight pairs of lateral leaflets and a terminal one, each of which is sessile on the leaf-stalk and deeply toothed (*Plate 11*).

The flowers of this species are unisexual though both male and female flowers grow together in dense purplish heads on the same plant. The upper flowers on each head are female. Each flower has four spreading, pointed sepals borne on the rim of a cup-shaped receptacle. There are two carpels, each with a long style having crimson feathery stigmas. There are, of course, no stamens. The lower flowers in the head are male, again having no petals but four sepals and between twenty and thirty stamens with anthers hanging pendulous at the ends of long, weak filaments. The fruit takes the form of two achenes.

The great or common burnet, formerly classified as *Sanguisorba officinalis*, is now recognised as *Poterium officinale*. It is a large perennial growing one to three feet high and preferring moist meadows. This plant bears few leaves, but they are much larger than those of salad burnet. Fundamentally the leaves of both species are similar, though the leaflets of the great burnet leaf are fewer in number and each is larger in size. Furthermore they are not sessile, but usually each is borne on a small stalk emerging from the leaf-stalk and there subtended by a small, sessile leafy bract.

The dense purplish flower-heads are also larger than those of salad burnet. In this species the flowers are hermaphrodite, and there are only four stamens.

Another member of the rose family (ROSACEAE, Dicot.) which grows in pastures is lady's mantle, a near relative of parsley piert and belonging to the same genus (*Alchemilla*, p. 239). Lady's mantle is *A. vulgaris*. The genus is a close relative of the genus *Poterium* (see above). Lady's mantle is a perennial which grows six to eighteen inches high and having yellowish-green flowers which appear during June to September. The plant is heavily covered with foliage, each leaf being palmately lobed with serrated margins. Both stems and leaves are hairy. The inflorescence is made up of many small, yellowish-green flowers. Each small flower has no petals, but it has four pointed yellowish-green sepals joined at their bases to form a cup which is very nearly closed at the mouth, but the four separate calyx segments spread beyond. There are usually four stamens and one to four carpels enclosed in the calyx cup, and after fertilisation these form achenes.

Dropwort (not in any way connected with the umbelliferous dropworts, p. 407) is an uncommon member of the ROSACEAE, Dicot. It

JUNE

belongs to the same genus as meadowsweet (p. 385), that is, *Spiraea*, and has been assigned the name *S. filipendula*. Dropwort has root tubers which are really the fibrous, thread-like roots swollen at intervals so that it appears as if the tubers are hanging from the threads. This characteristic of the plant is indicated in the specific name which is from the Latin *filum*, a thread, and *pendulus*, hanging. It is a perennial growing six inches to two feet high and favouring a few pastures and downs, there displaying its creamy-yellow flowers during June to August. The plant is fundamentally like that of meadowsweet (p. 385) though it is more graceful. The leaves are smaller but more beautifully cut, and the flowers are less crowded. Before the latter open they are tinted pink on the outside.

In June, the pea family (LEGUMINOSAE, Dicot., p. 95) is represented by several herbaceous plants which thrive in meadows, fields and pastures. There are three vetches, for example, though none of them belongs to the common *Vicia* genus (p. 225). The meadow vetchling or yellow vetchling or pea is a member of the genus *Lathyrus* (p. 216), which also includes the sweet pea. This wild member is *L. pratensis*. It is a large perennial herb, growing one to three feet high, and displaying its fairly large yellow flowers during June to September. Though, as its name implies, it grows in meadows, it may also be found in hedgerows (Plate 11).



Harold Bastin

LADY'S MANTLE

There is no mistaking the meadow vetchling, for it is fundamentally very like a small sweet-pea plant. The stems are angular and there is a creeping root-stock. The leaf is characteristic, being composed of a rather long stalk at the base of which are two long stipules and at the tip two larger lance-shaped lateral leaflets with the rest, the terminal part of the leaf, modified into tendrils. The showy, typically papilionaceous flowers are borne in one-sided racemes at the ends of long, axillary stalks. Both stems and leaves are covered with short hairs.

Two of the milk vetches also bloom in June, namely, milk vetch — sometimes also known as sweet milk vetch or wild liquorice — which favours thick calcareous gravel soils and sometimes even thickets, and purple milk vetch which thrives in dry sunny pastures and sometimes also thickets. Milk vetches are so called because they were supposed to stimulate an increase in milk supply in those cows which had chewed them. They belong to the genus *Astragalus*, derived from the Greek *astragalos*, a vertebra, since the seed is supposed to look like one, though the resemblance is not very close.

Milk vetch (*A. glycyphyllos*, from the Latin *glykys*, sweet, and *phyllon*, leaf) is commoner than its purple relative. The former is a perennial, growing two to three feet high and having angular flanged stems. The compound leaf bears seven to eleven pairs of fairly large lance-shaped leaflets and a terminal one. There are no tendrils. At the leaf-base are two wing-like stipules. The cream-coloured flowers are arranged in compact inflorescences borne on stout axillary stalks. The pale yellow flowers appear during June to September.

Purple milk vetch (*A. danicus* — Latin for Danish) is a rarer and smaller perennial growing five to nine inches high. The stem is less flanged and usually prostrate. The leaves are similar to those of the milk vetch but more hairy. The flowers are again borne in compact inflorescences more often terminal than axillary; but they are purplish in colour, though at times white and cream varieties occur. They appear during June to August.

Two more trefoils to be found in pastures during June. These also are members of the family LEGUMINOSAE, Dicot.

The hop trefoil (*Trifolium procumbens*) is a member of the same genus as that of clover (p. 233). It blooms during June to September. It is an annual having stems six to eighteen inches long, not quite procumbent but leaning forwards. The small leaves are typically trifoliate and the small yellow flowers are massed into almost spherical heads. The collection of fruits looks like a catkin of hop fruits.

Then there is the small yellow-flowering trefoil (*T. dubium*) which, according to Dr. Hugh O'Neill (p. 212), is the shamrock of Irish and Scottish Gaelic languages, literature and lore. It is an annual favouring pastures, and blooms during June to August. It has a wiry stem more or less procumbent and growing for six to eighteen inches. It differs

from the hop trefoil in that, while the latter bears thirty to forty flowers in each head, it bears only about a dozen. Furthermore each of the three leaflets is stalked.

One of the *Vicia* vetches (p. 225) of the family LEGUMINOSAE, namely, hairy vetch or hairy tare (*V. hirsuta*), breaks into bloom in fields and waste plots during June, and continues flowering until August. It is a very common annual, growing one to two feet high. Its leaves are divided into six to ten pairs of lateral leaflets and terminated by graceful tendrils. The pale-blue flowers are borne in groups of two to six on long axillary stalks.



Anne Jackson

MEADOW CRANE'S BILL.

Perhaps the loveliest of all the crane's bills is the meadow crane's bill — a very common species — and this grows in damp meadows, blooming for a short season (June and July). It belongs to the family GERANIACEAE, Dicot. (p. 177), and is included in the genus *Geranium* (*G. pratense*). The earliest of the crane's bills was the pink dove's-foot crane's bill (p. 177); in fundamentals the meadow crane's bill is similar, though it is larger and the flowers are of a different colour.

Meadow crane's bill is a perennial, growing one to three feet high; in fact, it is the largest of the British crane's bills and is a very conspicuous plant. Its beautiful shield-shaped leaves are borne in pairs. Each is sessile and divided usually into seven lobes, each of which is deeply fringed. Both stems and leaves are covered with silky hairs.

The beautiful blue flowers are borne in pairs, each on a short stalk, and where these latter bifurcate there are small foliar bracts.

Each flower is purplish-blue in colour and is much larger than the pink flower of dove's-foot crane's bill. In fact, meadow crane's bill flower is about an inch and a half across. Apart from this, both flowers and fruit (the latter are pendulous) are similar (Plate 11).

Fair queen of the meadows, oh where are you hiding?
I miss you at Hampton, I miss you at Kew:
There are ladies a plenty in Mayfair residing,
But none to compare with your beauty so blue.

The Poor Man's Garden: MADELEY

THE FLORAL YEAR

The bedstraw family (RUBIACEAE, Dicot., p. 181) also has a striking representative in the fields and on the downs of June. This is yellow or lady's bedstraw which grows not only in those places where the grass is short but sometimes also along hedge-banks and near the sea. It belongs to the same genus (*Galium*) as the goosegrass and is named *Galium verum*. It is one of the few species of this genus having golden-yellow flowers. There is a legend that this flower — formerly known as Our Lady's bedstraw — offered itself as a bed to the Virgin Mary on the night that Christ was born and so was rewarded with golden flowers instead of white. This perhaps explains the specific name which is from the Latin *verus*, genuine and true.

Lady's bedstraw is a procumbent perennial sending out runners from its roots and long thin stems for a distance of one or two feet. The leaves are very small and insignificant; but, as in goosegrass, they are borne in whorls, six to eight in each whorl. The golden flowers appear during June to September, borne in very dense terminal and axillary panicles. Dense as they are, and frequently growing in huge masses, they often make a fine sight. Apart from difference in colour, the flower is similar to that of goosegrass.

There are no hooks on the stem, leaves or fruits of lady's bedstraw. In Scotland this plant was sometimes used for curdling milk; so in places there it is known as cheese-rennet. The root, mixed with alum, makes a red dye.

The pink family (CARYOPHYLLACEAE, Dicot., p. 99) is represented in meadows and cornfields and along roadsides during June by the bladder campion or white bottle. This campion is one of those which belong to the genus *Silene* (*S. inflata*). It is perhaps the most familiar of the genus, for it is very common. It is so called because the five sepals are joined to form a swollen bladder. It blooms during June to August. Unlike the red and white campions (pp. 223, 369) the entire plant is devoid of hairs. The hermaphrodite flowers are borne in panicles. The deeply cleft petals are white. There are only three styles while the *Lychnis* campions have five.

The UMBELLIFERAE, Dicot., is represented in the fields and meadows of June by two not very common plants, both of which have now found a place in cultivated gardens. The caraway is a biennial growing one to two feet high. It also inhabits waste places. It belongs to the genus *Carum* (*C. carvi*). Both generic and specific names are from the Greek *Karon*, from Caria in Asia Minor from which the plant originated. It is a fairly typical umbellifer displaying its white umbels during June and July. It is also cultivated in herb gardens, for the seeds are used as a flavouring especially in cakes.

Then there is the wild carrot (*Daucus carota*), the progenitor of the



Harold Bastin

WILD CARROT

Being pollinated by 'soldier-and-sailor' beetles

cultivated form. Apart from the rare sea carrot (*D. gummifer*), it is the only British representative of this fairly large genus of almost world-wide distribution. The generic name is Greek, and the specific name Latin for kind of carrot. The plant is a biennial having a thickened root, though this is nowhere near as thick as that of the cultivated form. The white umbels are in bloom during June to August. The leaves are very like those of cultivated carrot. The fruits are covered with long prickles.

Two more members of the family POLYGONACEAE, Dicot. (p. 236), namely, the bistorts, make their first appearance during June. Bistort or snakeweed, sometimes also known as bistort snakeroot, grows in moist meadows and occasionally on cultivated ground. Amphibious bistort, or floating persicaria, favours streams (p. 465). Both bistorts belong to the genus *Polygonum*, a very large genus of herbs whose jointed stems are indicated in the generic name which is derived from the Greek *poly*, many, and *gony*, joint. The bistort of meadows is *P. bistorta*. The specific name is from the Latin *bis*, twice, and *torqueo*, to twist, for the large root is curiously twisted; this is also indicated in the common names bistort and snakeroot.

Bistort is a handsome perennial growing one to two feet high and displaying its heads of pink flowers during June to September. The plant is easily identified by its radical leaves which have long stalks bearing

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blades shaped like arrows the apices and lateral lobes of which are blunted. The leaf-blade passes down each side of the leaf-stalk to form a pair of narrow wings. The thick, jointed stem is more or less procumbent and it sends up thinner jointed stems bearing at each joint a small leaf: those aerial leaves towards the top of the stem are very small and lanceolate.

The flowers are borne at the top of the stem in dense, flesh-coloured spikes. Each flower is stalked and subtended by sheathing bracts. There are five pink sepals free except at the base, about eight long stamens, and a triangular ovary having three long, free styles.

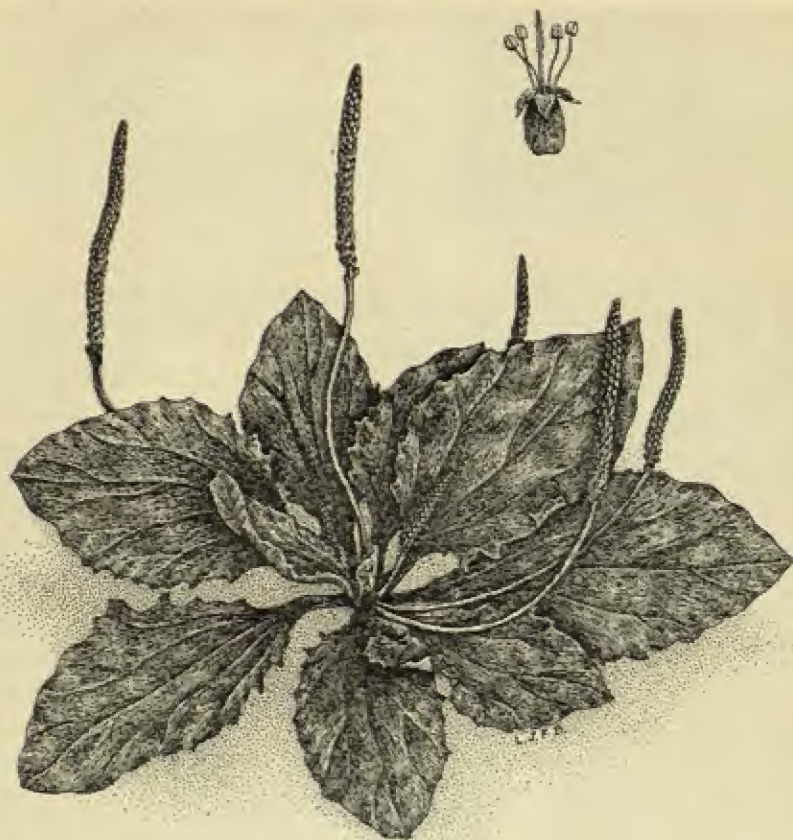
In the North of England, the stems are sometimes boiled and eaten as a vegetable. They are called Easter ledges or Easter man giants.

Plantains, those pests of the garden and lawn, are now in bloom. There are four common forms — the greater, the hoary, the ribwort and the buck's horn, and though some of these appear in all sorts of habitats, they also thrive in fields. Though plantain leaves are handsome, the plants in general are not attractive. The family, *PLANTAGINACEAE*, *Dicot.*, is a small cosmopolitan one of three genera, the most important of which is *Plantago* which is represented in Britain by the plantains. The generic name is derived from the Latin *planta*, the sole of the foot, for that roughly is the shape of the leaves of most species.

The greater or lamb's-tongue plantain (*P. major*), sometimes also called waybread and, in America, white man's foot, is typical of the genus. It is a perennial achieving a height of five to nine inches and flowering during June to August. Though it favours fields and waste places, it also invades lawns and gardens where its rosette leaves render it a real menace. When thus encountered it should be dug out or killed with a strong acid.

The large broad, oval and deeply ribbed leaves are stalked, and when the plant is growing in fields of fairly long grass these assume an erect posture. In waste places, and on lawns and gardens, on the other hand, they usually form a very flattened rosette.

The ribbed flower-stalk emerges from a leaf-axil and bears hundreds of small, inconspicuous flowers crowded together in a spike about four to six inches long. The sepals are reduced to form a four-cleft tube; the petals also are reduced to a four-cleft disk. There are four prominent stamens having purple anthers, and a long hairy style. The latter is usefully constructed since the flowers are usually wind-pollinated, though sometimes insects visit them to collect pollen. Cross-pollination is assured by the simple expedient of the carpels ripening before the stamens. The styles of the lowest flowers in the spike emerge while the flowers further up are still in bud. Therefore these styles collect air-borne pollen from other spikes. Then, as the styles above emerge, the stamens of the lowest flowers ripen. The fruit is a capsule which opens by a transverse split.



GREATER PLANTAIN

Top right, single flower

The fruiting spikes of greater plantain are sometimes fed to cage-birds, usually canaries. At one time the leaves were boiled and eaten as a green vegetable.

The hoary plantain (*P. media*) prefers fields on calcareous soils; but it also grows on waste ground and sometimes in cultivated fields and gardens. It is a perennial and just as common as the greater plantain. The flowering stalks achieve a height of six to twelve inches. The flowers appear during June to October. As a weed, this species is even worse than *P. major*, for the leaves (somewhat more elliptical) form a very closely knit rosette beneath which nothing can grow. The spike of flowers is much shorter than that of greater plantain, seldom being more than an inch long. The light purple anthers are very conspicuous. The flowers have an attractive scent.



Harold Bastin

RIBWORT PLANTAIN

The ribwort plantain (*P. lanceolata*) is also quite common, growing mainly in pastures and on cultivated ground and sending up flower-stalks six to eighteen inches high. The flowers appear from June to August. The leaves are long and lance-shaped with slightly toothed margins and very pronounced ribs. The inflorescence is almost globular and the anthers are white. Ribwort is sometimes also called cocks and hens.

In a few pastures and on downs the purging flax (*Linum catharticum*), of the family LINACEAE, Dicot., may be found; but it is not common. Although this species is a native of Britain, whereas the common blue flax was originally introduced from Ireland, detailed consideration of the flaxes will be deferred

until the blue flax appears (p. 450). Purging flax is an annual displaying its flowers on stems four to ten inches high during June to August. It differs from the common flax in having much-branched stems, small leaves borne in opposite pairs instead of alternately, and much smaller flowers which are white and not blue.

The perennial flax (*L. perenne*) is rare and confined to fields on calcareous soils in England. It does not occur in Scotland. Its pale-blue flowers appear during June and July.

In dry pastures, and sometimes woods, the gentian family GENTIANACEAE, Dicot. (p. 266), reveals itself again, this time through the common centaury. This graceful plant belongs to the genus *Erythraea*, a temperate genus deriving its name from the Greek *erythros*, red, denoting the colour of the flowers. Common centaury is *E. centaurium*, the specific and common names coming from the Greek *kentaurion*, which relates to the centaur Chiron, who was familiar with drugs.

Common centaury is an annual growing six to eighteen inches high and displaying its beautiful rose-coloured flowers during June to September. The oval narrow leaves are borne in pairs, and the flowers form flat panicles. Each flower is typical of the family. The sepals form a four-cleft tube and the five pink petals are joined into a narrow tube which spreads into five pointed lobes. The five stamens are inserted on the inside of the corolla funnel and project beyond its throat (Plate 14).





GENTIANACEAE, Dicot., is represented too by the yellow centaury, which is sometimes also known as yellow wort, or perfoliate yellow wort. It is not common, occurring in damp, calcareous, clayey pastures only. It belongs to the genus *Chlora* (*C. perfoliata*), the generic name being derived from the Greek *chloros*, greenish-yellow, and the specific name from the Latin *per*, through, and *folium*, leaf, for the stem seems to pass through each pair of leaves because their lower margins are fused around it.

Yellow centaury is an annual growing four to eighteen inches high and displaying its greenish-yellow flowers during June to September. In general habit it resembles the common centaury, though the leaves are somewhat broader. The number of floral parts, too, is different. There are eight corolla lobes and eight alternating stamens. The single-chambered ovary bears a three-lobed stigma.



Harold Bastin

COMMON CENTAURY

The pretty milkwort, which grows in very dry pastures and on warm hillsides and on heaths, showing a marked preference for chalky areas, introduces the cosmopolitan family POLYGALACEAE, Dicot. There are about ten genera in this family, the most important of which is *Polygala*, the only genus represented in Britain, and this by several species, the one most easily found being *P. vulgaris*, the milkwort (see also p. 259). There is a general belief that if cows eat this plant they yield more milk; this is indicated in the common name and the generic name which is derived from the Greek *poly*, much, and *gala*, milk (Plate 14).

Milkwort is a graceful little perennial growing two to ten inches high and presenting its flowers, which vary in colour (with blue predominating) during June to September. The small radical leaves are oval and are densely bunched together. The leaves on the thin stems are lance-shaped and are arranged alternately. For a wild flower, milkwort is exceptional in its varying shades of colour. These may be white, deep blue, pale blue, mauve or purple, and sometimes more than one colour is represented on a single plant. But the most common colour is blue.



Harold Bastin

MILKWORT

This is due to the calyx, which is very irregular. There are three green insignificant sepals and two large petaloid sepals which give the flower its colour. The petals are much reduced though the lowest one forms a crest-shaped organ. There are eight stamens and a two-chambered ovary having a long style surmounted by a cleft stigma.

Another parasitic broomrape (p. 258), the lesser (*Orobanche minor*, family, OROBANCHACEAE, Dicot.), is now beginning to produce its flowers and will continue to do so well into August. It may be found in fields and pastures, for its host is clover. It is an annual growing six inches to two feet high. The flowers may be yellow or purple.

New Monocotyledons are not very profuse in the fields and pastures of June. The most likely to be found is the crow garlic (*Allium vineale*) — a close relative of ramsons or broad-leaved garlic (*A. ursinum*, p. 208). These are members of the family AMARYLLIDACEAE, MONOCOT. Crow garlic is a perennial growing one to three feet high and shows a preference for drier fields than does the broad-leaved garlic. The entire plant has the same intolerable stench as its relative.

The leaves of crow garlic are quite different from those of the broad-leaved, for they are long and hollow like those of an onion. The flowers,

JUNE

which appear during June and July, are purplish and there are about twelve to each umbel. Frequently small bulbs appear in the umbel itself; these are duly shed, and after lying dormant in the soil for some time sprout to produce new plants.

Four fairly rare orchids (ORCHIDACEAE, Monocot., p. 209) bloom in fields during June. But they are not easy to find.

It seemed as if the breezes brought him ;
It seemed as if the sparrows taught him ;
As if by secret sight he knew
Where, in far fields, the orchis grew.

Woodnotes : EMERSON

The small butterfly orchis (*Habenaria bifolia*) prefers moist meadows, but it may sometimes also be found in copses. It is very like the large butterfly orchis (p. 297) in fundamentals, though it is slightly smaller in general habit and the white flowers are certainly smaller.

The frog orchis, also a member of the same genus (*H. viridis*), favours hilly pastures. It is a smaller perennial growing four to twelve inches high and presenting its flowers during June to September. These, as the specific name implies, are green. The three outer segments of the perianth arch over the rest of the flower. The labellum is two-lobed and the spur is very short. There are several large, oval leaves.

Musk orchis is the only British representative of the genus *Herminium* (*H. monorchis*) and it favours calcareous pastures. It is a perennial growing four to eight inches high and presenting its yellowish-green flowers during June and July. These are arranged in a long spike. Each flower is small and has no spur. It emits a musky smell. There is a large root tuber, this time spherical and placed at the base of the stem. This bears an apparent resemblance to the foot of a bedpost, hence the generic name from the Greek *hermin*, bedpost. The



Ernest G. Neal

BEE ORCHIS

THE FLORAL YEAR

specific name is from the Greek *mono*, one, and *orchis*, tuber.

The bee orchis is a further representative of the genus *Ophrys*, p. 167 (*O. apifera*, the specific name being derived from the Latin *apis*, bee, and *fero*, to bear). The bee orchis is a perennial growing six to fifteen inches high and presenting its purple flowers in spikes during June and July. The inner surfaces of the outer perianth segments are pinkish and the three-lobed labellum is brownish-purple. There is certainly a resemblance to a bee. The small oval leaves are crowded up the lower part of the stem. The root tubers are pronounced (*Plate 14*).

OTHER FLOWERS WHICH MAY APPEAR IN FIELDS, MEADOWS OR PASTURES DURING JUNE

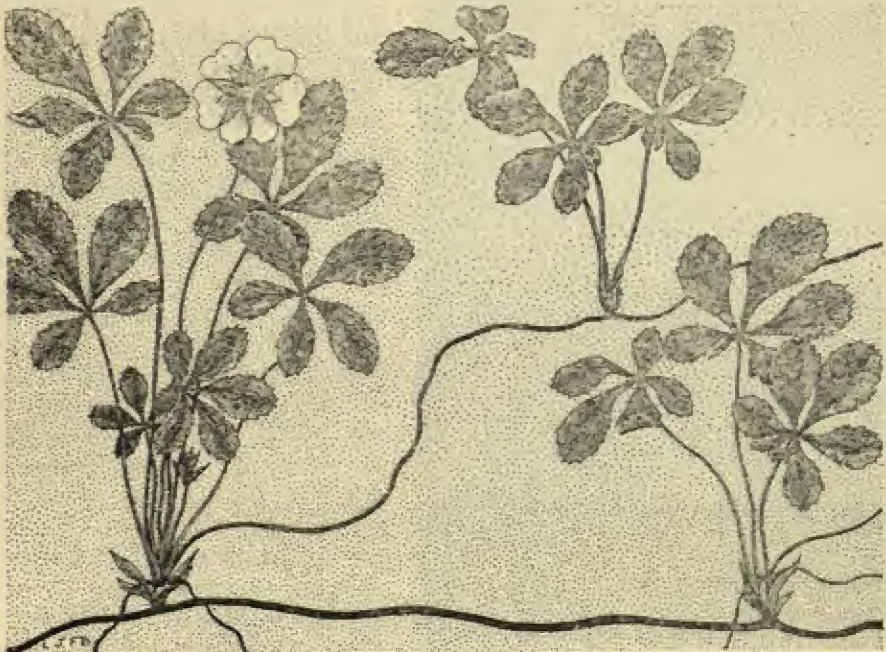
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WAYSIDES AND WASTE PLACES

ALONG waysides and in dry waste places the rose family (ROSACEAE, Dicot., p. 302) is represented by two very common members, namely, silverweed and creeping cinquefoil. Both belong to the genus *Potentilla* to which the barren strawberry or strawberry-leaved cinquefoil also belongs (p. 123), and in many respects all three of these plants are similar.

Silverweed (*P. anserina*) is a creeping perennial which sends up leaves and flowers to a height of three to twelve inches. It prefers very dry situations; in fact, it frequently invades the road itself. It also grows on waste land, the rockier the better, and in coastal areas. It was supposed to favour heathy parts frequented by geese, hence the derivation of the specific name, from the Latin *anser*, goose. The plant spreads easily by means of creeping stems. The leaves are almost fern-like, for each is divided into six to eight pairs of leaflets and a terminal one, and between these there are smaller subsidiary leaflets, and all of them are deeply cut. The under-surface of the leaflet is covered with soft white down bestowing



CREEPING CINQUEFOIL

on the whole leaf a silver sheen, hence the common name. The golden-yellow flowers appear during June to August; apart from colour they closely resemble those of the strawberry, even to the presence of the unusual epicalyx. The fruits are also similar, being a collection of dry achenes.

Roots of silverweed are sometimes roasted or boiled like parsnips, especially in the Hebrides (Plate 12).

Creeping cinquefoil (*P. reptans*, from the Latin for creeping) is another perennial creeping along the ground and sending up leaves and flowers six to eighteen inches high. It favours waste places, sometimes even very stony ground. Frequently this plant also appears in dry meadows. The compound leaf is divided into five serrated leaflets palmately arranged; this explains the common name. The flowers, which appear during June to September, and the fruit closely resemble those of silverweed (p. 343).

Another representative of ROSACEAE, Dicot., is agrimony (not to be confused with hemp agrimony, p. 499), and this grows along waysides and on banks and even in hedgerows. It is the only common British member of the north-temperate genus *Agrimonia* (*A. eupatoria*). The generic name

is not very appropriate for it comes from the Greek *agros*, field, and *mone*, habitation; yet, though the plant does occur in fields, it prefers waysides. On the other hand, it has been suggested that the name agrimony is derived from the Greek *argema*, an infection of the eyes, and that the Greeks called the plant which cured the infection *argemone*, which has since become corrupted to agrimony.

Agrimony is a perennial growing eighteen inches to two feet high and displaying its yellow flowers during June and July. As in other members of the family, for example silverweed, the leaf is compound but very irregular. There are seven to nine pairs of lateral leaflets and a terminal one and interspersed laterally are other smaller leaflets of varying sizes. The entire plant is covered with small hairs.



Harold Bastin

AGRIMONY

The small, yellow, sweetly scented flowers are borne in a long stiff raceme, the lower flowers opening first. Each flower, small though it is, is typically rosaceous, though there are only one or two carpels. The fruit is surrounded by a tuft of hooks by means of which it clings to passing animals and thus becomes dispersed.

Agrimony is supposed to have medicinal virtues, and country-folk used to make tea from it which they drank as a tonic. Gerard wrote that it was "good for naughty livers".

The plant was also thought to be a useful antidote to snake-bite :

Next these here Egremony is,
That helps the serpent's biting.

Muses' Elysium : DRAYTON

but this is doubtful. At one time a yellow dye was extracted from the root-stock.

COMPOSITAE, Dicot. (p. 126), is represented along waysides and in waste places during June by the black or hard-head knapweed, the first member of the genus *Centaurea* to be met, for this genus is generally late-flowering. Knapweed is called cornflower in some parts : it is not the true cornflower, of course — nothing could successfully simulate the blue of the cornflower — though both plants are structurally so alike that they are included in the same genus. *Centaurea* is a very large genus comprising about six hundred species, the majority of which are native to Mediterranean regions, though there are only eight indigenous to Britain. The name is from the Greek *kentaurion*, referring to Chiron the centaur who was skilled in drugs (*Plate 11*).

Black knapweed is *C. nigra*. It is conspicuous in many habitats, though it favours wayside banks, railway embankments, waste places and roadsides. It sometimes also occurs in fields, especially cornfields.

By copse and hedgerow, waste and wall,
He thrusts his cushion red ;
O'er burdock rank, o'er thistles tall,
He rears his hardy head ;



Harold Bastin

HOOKED FRUITS OF AGRIMONY

THE FLORAL YEAR

Within, without, the strong leaves press,
He screens the mossy stone,
Lord of a narrow wilderness,
Self-centred and alone.

Knapweed: A. C. BENSON

The plant is a stiff-growing perennial attaining a height of anything from six inches to three feet and displaying its conspicuous reddish-purple heads of flowers during June to September. The large leaves are deeply divided, though the smaller ones near the tops of the stems are lanceolate.

The flower-head (capitulum, p. 131) is surrounded by a large, conspicuous involucre which is composed of closely packed overlapping bracts each of which is green but fringed with dark brown. The oval involucre is a hard knob; in fact, the prefix *knap* means knob. All the purple flowers are tubular (TUBULIFERAE, p. 132) and they push their way up through the 'hard head' of bracts. All the disk flowers are hermaphrodite. Each has a small pappus surrounding the base of a long, thin corolla tube. This tube widens farther up and is there divided into five pointed lobes. Inside it is the usual tube of five joined stamens surrounding a style with a cleft stigma. The pappus forms a fringe of hairs on the top of the fruit. The ray flowers are few in number (in fact sometimes there are no ray flowers at all). They are much larger than the disk flowers, being composed of a large corolla tube whose lobes are larger and more spreading. There are no other organs, for the ray flower is neuter.

Black *knapweed* was once upon a time recommended for treating wounds and the plague, though it is difficult to say with what effect.

Associated with the black and other *knapweeds* one might discover the tall broomrape (*Orobanche major*, family OROBANCHACEAE), for this parasite favours *knapweed* as its host, though it will also accept other members of the COMPOSITAE. Tall broomrape is similar fundamentally to the other broomrapes (p. 258). It is a perennial growing nine inches to two feet high and bears its dull yellow flowers during June to August.

Another member of the COMPOSITAE, Dicot., which grows in waste places, and sometimes also in cultivated fields, is the common sow-thistle, a strangely attractive plant belonging to the genus *Sonchus*, a fairly small genus of which four species are British. The generic name is from the Greek *sonchos* which means sow-thistle.

Common sow-thistle is *S. oleraceus*, from the Latin *olus*, a culinary vegetable. It is also known as milk-thistle, for it contains a milky juice, and though it is not now eaten by man it is very much relished by rabbits. It is an annual growing one to three feet high, displaying its heads of pale yellow flowers during June to August. It has a creeping root-stock. But the plant is easily identified by its leaves. The lower ones are shaped

something like those of the dandelion, that is, having large, backwardly extending segments; but the whole margin is secondarily small-toothed and therefore prickly. There is a leaf-stalk flanged with narrow wings from the downwardly extending blade. Farther up the stem the leaves are sessile, less deeply segmented yet sharply toothed, and the bottom of the blade practically encircles the stem.

The pale-yellow flowers are borne in small heads, each separately stalked; but usually there is a collection of heads whose stalks come off at a common point in umbellate fashion, and at this common point there are one or two toothed bracts. The involucre is composed of green, pointed overlapping bracts which support a capitulum of nothing but ligulate flowers (LIGULIFLORAE, p. 132). Each flower is very like that of a dandelion flower: but the fruit has no parachute; it is a compressed achene with a fringe of hairs.



Ernest G. Neal

SOW-THISTLE

Upon the various earth's embroidered gown
There is a weed upon whose head grows Downe;
Sow-thistle 'tis ycleped, whose downy wreath,
If any one can blow off at a breath,
We deeme her for a Maid: such was his haire,
Ready to shed at any stirring ayre.

Britannia's Pastorals: WILLIAM BROWNE

Along waysides and in waste places, sometimes on railway embankments and even in fields and woods, the tall melilot presents its yellow flowers during June to August. It is a typical member of the pea family (LEGUMINOSAE, Dicot., p. 95), and is one of the several British representatives of the genus *Melilotus*, a temperate or sub-tropical genus, whose name is derived from the Greek *meli*, honey, for the flowers contain much nectar, and *lotos*, trefoil, for the leaves are trifoliate (Plate 19).

Tall melilot (*M. officinalis*) is a biennial achieving a height of two to three feet. The large trifoliate leaves bear two pointed stipules at the bases

of their leaf-stalks. The three leaflets are serrated. The yellow flowers are borne in large, one-sided clusters borne at the end of long axillary stalks.

Like wood-ruff (p. 215), melilot emits a smell of new-mown hay as it dries.

There is a rare species of melilot with white flowers (*M. alba*), and the smaller species (*M. indica*), which grows only six to twelve inches high and has yellow flowers, is an annual.

In both waysides and waste places, the common mallow now asserts itself with its showy flowers (Plate 12). This introduces us to a new family, the MALVACEAE, Dicot. — a family of fairly simply constructed flowers comprising about thirty-five genera, distributed in tropical and temperate regions. This family contains plants of economic importance such as cotton plants (*Gossypium barbadense*, *G. arboreum* and *G. herbaceum*) and the coca plant (*Erythroxylon coca*), the source of cocaine. Then there are several genera which give us some beautiful garden plants such as *Malva* (mallows), *Althaea* (hollyhocks), *Hibiscus* and *Lavatera*.

Three genera, *Althaea*, *Lavatera* and *Malva*, are indigenous to Britain; the common mallow belongs to the last named. The generic name *Malva* is said to come from the Greek *malakos*, soft, for the plants are supposed to have soothing properties (the juices were used as emollients).

Common mallow (*M. sylvestris*) is a conspicuous plant which grows along waysides and roadsides, in waste places and in hedgerows. This strong and sturdy plant has handsome leaves (at any rate when young), and these are divided into five toothed lobes. Both stems and leaves are very hairy. But it is the flowers which are so striking, though many people do not like their colour. They appear during June to September. Each is large and is borne on a short stalk emerging from the axil of a leaf. There are five united sepals, and outside these are three bracts. The five large, mauve, clearly veined, petals are free and each is shaped like an elongated heart. The stamens are indefinite in number, and all their stalks are united to form a tube. The carpels number ten to fourteen and these are united in a radiate fashion, thus forming a ring. There are as many styles as carpels. The flower ensures cross-pollination in the following manner. The numerous stamens ripen first. After shedding their pollen on the visiting insect they bend outwards and downwards and the styles grow in length, thus placing the stigmas in the original position of the stamens where they are ready to come into contact with the next visitor.

After fertilisation, the carpels produce a ring of wedge-shaped fruits which children call 'cheeses' and sometimes eat.

The sitting down, when school was o'er
Upon the threshold of the door,
Picking from Mallows, sport to please,
The crumpled seed we called a cheese.

J. CLARE

After the flowers have disappeared, the plant becomes ragged and untidy, and snails eat the leaves ; no wonder therefore in some localities common mallow is called rags and tatters.

Viper's bugloss is a representative of the forget-me-not family (BORAGINACEAE, Dicot., p. 272), and it grows in waste places and on dry downs and cliffs, beginning to bloom during June. It is the only common member of the genus *Echium*, a small European genus which derives its name from the Greek *echis*, viper, owing to the shape of the flowers which look like vipers with their tongues hanging out.

Viper's bugloss (*E. vulgare*) is a handsome biennial (so handsome that it is sometimes cultivated) growing one to three feet high. It has only a short flowering season (June



Harold Bastin

VIPER'S BUGLOSS

and July). The fairly small, sessile leaves are narrow and tapering, and they and the spotted stems are covered with small, prickly bristles. This is reflected in the common name bugloss, which is derived from the Greek for ox's tongue. The flowers are borne in long lateral spikes. The flower, again like many other members of the family, undergoes a colour-change, beginning a bright rose-red, then changing through purple to blue. All ages of flower are present in any one spike, so therefore are the different shades of colour. (On occasions, a white variety of viper's bugloss may be found.)

The flower is irregular in that the five petal lobes are uneven. This is unusual in a family of regular flowers. There are no scales in the corolla tube as there are in the small bugloss (p. 370). The sepals are joined to form a five-toothed calyx. The five stamens are inserted in the corolla tube and alternate with its lobes. The ovary is divided into four, and after fertilisation four small nuts result.

The prickly Bugloss loves to crown
A Kentish cliff, a Surrey down ;
Little she recks of shine or shower,
And she should be Britannia's flower.

The Poor Man's Garden : MADELEY



Harold Bastin

BORAGE

A more robust member of the BORAGINACEAE, Dicot., is borage which grows in waste places, especially near buildings, and sometimes also in fields. It belongs to the genus *Borago*, a small European and Asiatic genus which probably derives its name from the Greek *borra*, hair, for indeed this plant is covered with bristly hairs; though Linnaeus suggested that the name is a corruption of *corago*, from *cor*, heart, and *ago*, to act, since the plant was used as a heart sedative.

Borage (*B. officinalis*) is a biennial growing one to two feet high and blooming during June and July. It is stout and very leafy, the large, hairy leaves being lance-shaped with entire, though wavy, margins.

The fairly large, deep blue flowers are arranged in small terminal inflorescences. The five long, pointed sepals are joined only at their bases; so also are the blue petals which open out into a five-pointed, reflexed star. Cross-pollination is ensured as follows: the five stamens form a hollow cone around the ovary, and since the flower is pendulous the apex of the cone is at the bottom. The stamens shed their pollen inside the cone and it therefore falls into the apex. Nectar is secreted at the base of the ovary which is above. A visiting bee, in forcing its way to the nectar, first makes contact with the pollen grains. As the flower gets older, its stigma projects beyond the cone of stamens and is thus first touched by the bee which probably is already covered with pollen from another flower.

Borage plants were at one time used in making cordials; even today sprigs of borage are put in claret and other cups instead of cucumber which it resembles somewhat in flavour.

On occasions a white variety of borage may be discovered.

Curled dock is the first of the docks to break into flower. The docks belong to the family POLYGONACEAE, Dicot. (p. 236). They are included in the genus *Rumex* (p. 237). Detailed consideration of the docks will be deferred until the very common broad-leaved dock occurs; though

curled dock (*R. crispus*) is not uncommon, frequenting waste places. It is a large perennial growing two to four feet high and bearing its greenish flowers in long inflorescences during June to August. The large, oval leaves have wavy edges; this is indicated in the specific name which is Latin for curly.

For the first time in the floral year another rather uninteresting family, namely, CHENOPODIACEAE, Dicot., makes its appearance. It does so through the none-too-common Good King Henry to which the other picturesque names of mercury and allgood are sometimes also applied. The name Good King Henry has nothing to do with any actual King Henry. It means good *heinrich*, from the German *heim*, home, for it seems to thrive best around villages. Other authorities say it refers to Heinz and Heinrich, those evil spirits from which this plant offered protection. Though structurally uninteresting, the members of this family have an intriguing distribution, for many of them live in salt-water areas and many are modified accordingly. Coastal areas and salt steppes in many parts of the world are the haunts of members of this family; in Britain the sea beet, species of orache, sea purslane, glasswort and saltwort — all members of the family CHENOPODIACEAE — are inhabitants of salt marshes. The family also contains plants of economic importance such as beet, spinach, mangel-wurzel or mangold and orache.

Good King Henry belongs to the genus *Chenopodium* which contains plants which are neither of much economic importance nor lovers of salt water. Most of them grow in waste places and all too often appear on cultivated ground. With the exception of Good King Henry, members of the genus are known as goosefoots (p. 466) owing to the shape of their leaves, and this is reflected in the generic name which is derived from the Greek *chen*, goose, and *podion*, little foot. Most members of the genus show a tendency for their leaves to become triangular.

Good King Henry (*C. bonus-henricus*) is typical of the genus and very like the goosefoots. It is



Harold Bastin

GOOD KING HENRY



E. J. Bedford

HENBANE

a fairly succulent perennial (though all the rest of the genus are annuals) and grows in waste places and along waysides, achieving a height of nine inches to two feet. Like certain cultivated members of the family, it is sometimes treated as an esculent vegetable and cooked like spinach.

The triangular, more or less arrow-shaped, leaf is stalked and at the base of the stalk is a pair of stipules. Its margins are wavy. The small greenish flowers, which appear during June to October, are borne in leafless terminal compound spikes. To each flower there are five free, boat-shaped sepals, no petals, five stamens and a single-chambered ovary with two styles. The fruit is a round nut.

In waste places, on calcareous soils and also near the sea the notorious henbane grows. It is another member of the potato family (SOLANACEAE, Dicot., p. 289), and, like the deadly nightshade (*Atropa belladonna*), it is very poisonous, though it is placed in another genus, *Hyoscyamus*, whose name has a curious derivation. It is from the Greek *hys*, pig, and *kyamos*, bean. Some authorities interpret this as meaning that the plant produces lameness in pigs; others claim that it signifies that pigs can eat henbane fruits with impunity.

Henbane (*H. niger*) is a clumsy-looking, though not unattractive, biennial growing one to three feet high and displaying its fairly large yellow flowers during June to September. The long, deeply toothed leaves are not unlike oak leaves though their marginal teeth are more pointed and the bases of the blades encircle the stem. The plant is very hairy.

The flowers are borne in dense clusters along one side of the stem; in fact, the terminal inflorescences are scorpioid. The five sepals of the flower form a tube with five prominent teeth. The five petals, yellow and conspicuously veined with purple, form a tube which spreads out in campanulate fashion into five lobes about an inch across. The five stamens alternate with these lobes. There are two carpels which are

fused to form a two-chambered ovary. The fruit is a large, two-celled capsule which remains enclosed in the dry calyx and opens by means of a lid.

Henbane is narcotic and has been used as such since the Middle Ages. It yields the drug hyoscyamine and other drugs; for this purpose it is sometimes cultivated. Country-folk used to smoke the capsules and seeds as a cure for toothache—a practice not to be encouraged. Hyoscyamine itself is a valuable hypnotic and sedative, but must be taken only under supervision, for it is very strong.

The prospect of finding anybody out in anything would have kept Miss Miggs awake under the influence of henbane.—*Barnaby Rudge*: DICKENS

Too much of the drug causes delirium, loss of speech and paralysis. It has been suggested that henbane was the 'hebenon' used for murdering Hamlet's father; but this is doubtful.

Upon my secure hour thy uncle stole,
With juice of cursed hebenon in a vial,
And in the porches of my ears did pour
The leperous distilment.

Hamlet, Act I, Sc. 5: SHAKESPEARE

On the other hand, it, or the deadly nightshade, might have been the 'insane root' in *Macbeth*.

Were such things here as we do
speak about?
Or have we eaten on the insane
root
That takes the reason prisoner?

Macbeth, Act I, Sc. 3:
SHAKESPEARE

Another member of the SOLANACEAE, Dicot., is the thorn-apple; but it is rare, though it sometimes appears in waste places during June. It belongs to the genus *Datura*, a tropical and sub-tropical genus. In fact, thorn-apple is really an escape, for the genus is not indigenous to Britain at all. The generic name is from the Arabic *tatorah*. Thorn-apple is *D. stramonium* (from the Latin for a poisonous



Harold Bastin

THORN-APPLE
Flowers and fruit



Harold Bastin

WILD MIGNONETTE

entire plant emits an offensive smell; that is why it is sometimes called foetid horehound.

Wild mignonette now appears in waste places and in cultivated fields mainly on chalky and sandy soils. It introduces the small family RESEDACEAE, Dicot., a fairly widely distributed family containing plants adapted for living under abnormally dry conditions. Mignonette is a member of the genus *Reseda*, the name of which may be derived from the Latin *resedo*, to appease or heal, though there is some doubt about this.

There are two wild mignonettes, but neither emits that charming perfume that the garden species (*R. odorata*) does (incidentally, this garden species is of Egyptian origin.) It was probably this character which inspired the common name for it in French for little darling; Cowper, in *The Task*, referred to the plant as the "Frenchman's darling".

The wild form of mignonette now to be found in waste places and on chalky and sandy arable ground is *R. lutea*, having yellow flowers; the other, *R. alba*, is confined to waste places and it has white flowers, but they appear about a month later. Both are biennials growing one to two feet high. *R. alba* is much rarer and is not really native to Britain. Though the leaves of the garden mignonette are broad and oval, those of

plant). The white flowers appear during June to September. The main characteristic of the plant is the fruit which is covered with spines.

Black horehound, a typical member of the mint family (LABIATAE, Dicot., p. 158), figures in waste places, along roadsides and on hedge-banks during June. It belongs to the south-European and western-Asiatic genus *Ballota*, which is Greek for horehound. Black horehound (*B. nigra*) is a perennial growing up to three feet high. The downy leaves, in shape and arrangement, are very similar to those of white deadnettle (p. 222), so also are the flowers, but here they are purple and present themselves during June to October. The



JUNE

both wild species are so deeply cut as to appear compound, the leaves of *lutea* being more deeply cut than those of *alba*.

The small flowers are borne in dense, mainly terminal, inflorescences. Each flower has six narrow sepals, six petals each cut into irregular segments, many stamens and a few carpels fused to form a single-chambered ovary having a stigma set directly on it. The flowers of *R. lutea* appear during June to August; those of *R. alba* during July to August.

The showy spikes of *Verbascum* species, in varying colours of white, pink, yellow, blue, mauve and purple, are frequently to be seen in the herbaceous borders of gardens. But the wild progenitors are not so common. Yet there are half a dozen wild species in Britain, all of them known as mulleins. The only common example is the great mullein and it may occur along roadsides and in waste dry places, especially in chalky areas. *Verbascum* is a large genus belonging to the family SCROPHULARIACEAE, Dicot. (p. 226).

Great mullein (*V. thapsus*) is a bulky biennial growing one to four feet high and presenting its towering, stiff spikes of pale yellow flowers during June to August. Owing to its appearance when in flower it is sometimes also known as high taper, hedge taper, torch and Aaron's rod. Both stems, leaves and even inflorescences are so smothered in soft white hairs that the whole plant seems to be enshrouded in cotton-wool. This is indicated in the generic name which is a corruption of *barbascum* which is from the Latin *barba*, beard. Even the common name, mullein, is derived from the Latin *mollis*, meaning soft. Other more localised names such as Adam's flannel and Adam's blanket are therefore seen to be appropriate. The plant probably originated from the Mediterranean island of Thapsus as suggested by its specific name.

At the base of the shoot,



Harold Bastin

GREAT MULLEIN

THE FLORAL YEAR

very large, woolly, lance-shaped leaves are densely crowded together. They also crowd part of the way up the stem, but then gradually separate out and become smaller and smaller until they merge into nothing but fairly small bracts which subtend each flower in the crowded spike. The lowest flowers of the spike open first.

As has already been seen (p. 227), the family SCROPHULARIACEAE shows a progressive reduction in number of stamens; for example, the genus *Veronica* has only two. But *Verbascum* has the maximum for the family, that is, five — two long and three short. Even the filaments of the stamens are hairy. There are five woolly, united sepals; five large yellow petals joined to form a small tube then opening out freely into five lobes; and a two-chambered ovary surmounted by a long style.

Those who live in the west of England should now keep an eye on the more secluded waysides for the yellow or procumbent wood sorrel (*Oxalis corniculata*) of the family OXALIDACEAE, Dicot. Though fundamentally like the white wood sorrel (p. 212), it differs vegetatively in being procumbent and hairy. Furthermore, the flowers are much smaller, yellow in colour and there are two borne on each axillary flower-stalk. They appear during June to September.

OTHER FLOWERS WHICH MAY APPEAR IN WAYSIDES OR WASTE PLACES DURING JUNE

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MORE WEEDS

CORNFIELDS, gardens and other forms of cultivated ground are a veritable paradise for the field botanist during June; for not only are the cultivated plants themselves in evidence but there is also a heavy crop of weeds.

One of the less common of these — a comparatively harmless one — is the lovely pheasant's eye, a member of the buttercup family (RANUNCULACEAE, Dicot., p. 229), though its flowers are scarlet. This quite beautiful annual grows six to ten inches high and blooms during June to September. It is the only British member of the genus *Adonis* (*A. autumnalis*), named after Adonis, the son of Cinyras, beloved by Venus: he was killed by a wild boar, and his blood stained the petals of this flower.

The leaves are very finely divided. The flower, bright red though it is, is typical of the buttercup family. There are five sepals, five to ten petals without nectaries, many stamens and many free carpels.

Ripening cornfields of June are always associated with the common red poppy or corn rose (Plate 13). The flashy red of this beautiful flower renders it so conspicuous that it cannot be overlooked. It often appears in other habitats, especially different forms of arable land. Frequently so many appear at the same time that the fields seem to be flushed with red.

Summer set lip to earth's bosom bare,
And left the flushed print in a poppy there:
Like a yawn of fire from the grass it came,
And the fanning wind puffed it to flapping flame.

The Poppy: FRANCIS THOMPSON

The poppy brings forward again the fairly small but simple family PAPAVERACEAE, Dicot., a family closely related to the buttercup family. (The greater celandine, p. 261, was the first member encountered.) The family is mainly north temperate in distribution, and many of its members contain latex. Poppies belong to the genus *Papaver*, and the common red poppy is *P. rhoeas*. The generic name is Latin for poppy, and the specific name is from the Greek *rhoia*, pomegranate, for the poppy capsule superficially resembles a pomegranate fruit.

All members of the genus *Papaver* are annuals. The common red poppy grows one to two feet high and is a very hairy plant, bearing silky white hairs on stems, leaves and even sepals. The entire plant contains a narcotic latex which stains the hands red.

THE FLORAL YEAR

The solitary flowers, which appear during June and July, are borne on long, graceful stems and they nod pensively especially when young or in bud. The two green, boat-shaped, hairy sepals are very deciduous and fall off as soon as the flower opens, sometimes breaking away from the base, sometimes from the tip. The four soft, tissue-like scarlet petals are of unequal size—two outer large and two inner somewhat smaller ones. There are numerous black stamens. The carpels, though indefinite in number, are united to form a single-chambered ovary, at the top of which is a number of stigmas arranged radially like the spokes of a wheel. Though the flower has no nectar it is visited by insects seeking pollen to make 'bee-bread'. Thus the plant may be cross-pollinated; but if not, then it resorts to self-pollination. Like the sepals, the petals are also very deciduous, and they are shed as soon as pollination has occurred.

The fruit is a very interesting capsule having a pepper-box mechanism for seed dispersal (p. 31).

The poppy with her cracking pepper-pot
That spills in ripened moment split asunder.

The Garden: V. SACKVILLE-WEST

The leaves are deeply segmented, but they are sessile.

Yet with all its floral beauty and botanical interest, the common red poppy is a weed which farmers justifiably despise.

On one side is a field of drooping oats,
Through which the poppies show their scarlet coats,
So pert and useless, that they bring to mind
The scarlet coats that pester human-kind.

Epistle to my Brother George: KEATS

The rarer rough-head poppy (*P. argemone*) also grows in cornfields; it is much paler red in colour. Though the opium poppy (*P. somniferum*), from which the juice is extracted (mainly from the fruit) for the production of morphine and laudanum, grows wild in Britain, it is more at home in Mediterranean regions. It has been cultivated for the drugs it yields since Neolithic times. Its leaves are simple though toothed, and they are not hairy but very glaucous. The flower is large and has white petals with purple patches at their bases.

Very close to PAPAVERACEAE, Dicot., in the scheme of flowering plant classification is the FUMARIACEAE, Dicot. — a family which introduced itself through climbing corydalis (p. 295), and then again through the rampant fumitory (p. 317). But consideration of the family was deferred until a more common member appeared during the floral year, and now it has arrived, for the common fumitory is indeed a common plant in cornfields, on other arable land, along waysides and in hedgerows.

FUMARIACEAE, closely akin to PAPAVERACEAE and RANUNCULACEAE, is one of the more primitive of Angiospermous families. Indeed, so closely

related is it to the PAPAVERACEAE that some botanists do not recognise a distinction, and place the two families under the latter heading. There are only two British genera in FUMARIACEAE, namely, *Corydalis* (p. 295) and *Fumaria*, and the fumitories belong to the latter. The common name is from the Latin *fumus terrae*, smoke of the earth, for there was a strange legend that the plant arose from smoke which, coming from the earth, was acted upon by the wind and sun and thus turned into fumitory.

Common fumitory (*F. officinalis*) is an annual growing six to twelve inches high and presenting its purple flowers during June to September. The leaves are so finely divided into triangular lobes as to appear much like maidenhair fern. The small flowers are borne in graceful axillary racemes. As in the poppy there are two deciduous sepals. The four petals are irregular; of the two outer ones, the upper is swollen at its base to form a blunt spur which contains nectar. All four petals are purplish-pink tipped with deeper purple, and they are elongated into a tube (though they are not joined to each other), the deep purple tips acting as honey-guides. There are six stamens grouped into two bundles of three each. The single-chambered ovary has a long style with a lobed stigma.

As its specific name implies, common fumitory was at one time considered to have medicinal properties.

Ye take your laxatyves
Of lauriol, centaure, and fumetere,
Or else of ellebor.

Nun Priest's Tale: CHAUCER



Harold Bastin

COMMON FUMITORY

Botanists recognise one or two other species of *Fumaria* and these also grow in cornfields; but their distinctive characters are not easy to recognise, so much do they resemble the common species.

THE FLORAL TEAR



Ernest G. Neal

CHARLOCK

Fumitory, too, a name
Which superstition holds to fame,
Whose red and purple mottled
flowers
Are cropped by maids in weeding
hours,
To boil in water, milk or whey,
For washes on a holiday,
To make their beauty fair and
sleek,
And scare the tan from summer's
cheek.

J. CLARE

Charlock, or wild mustard, is a pernicious weed on arable land, preferring land under root and *Brassica* crops, though it seems to pop up everywhere, even suddenly on newly ploughed land. This is because its seeds are very viable; indeed they have been known to last for a century especially when buried beneath turf, yet when disturbed and brought near the surface of loose, moist soil they germinate. Sometimes they suddenly ger-

minate in their thousands and then in a few months the fields are a sea of pale yellow (*Plate 13*).

The charlock on the fallow
Will take the traveller's eyes,
And gild the ploughland sallow
With flowers before it dies.

More Poems: A. E. HOUSMAN

What dazzled all, and shone far-off as shines
A field of charlock in the sudden sun
Between two showers, a cloth of palest gold.

Gareth and Lynette: TENNYSON

Charlock is a member of the by now familiar family CRUCIFERAE, Dicot. (p. 95). So closely related is it to the cabbages (*Brassica*) that some botanists place it in the same genus. Others, however, have separated it and the mustards, and assigned it to the genus *Sinapis*, the Latin for mustard, though stated by some authorities to come from the Greek *sinos*, damage, and *ops*, eye.

Charlock (*S. arvensis*) is a sturdy annual growing one to two feet high and displaying its fairly large flowers during June to August. Its leaves

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are very like those of garlic mustard (p. 223). Both stems and leaves are hairy. The yellow flowers are typical of the family, therefore very like wallflower both in fundamental structure and arrangement in inflorescence. The fruit is a typical siliqua.

The boy called to his team
And with blue-glancing share
Turned up the rape and turnip
With yellow charlock to spare.

Late Autumn: ANDREW YOUNG

The two annual mustards, also members of the genus *Sinapis*, namely, white (*S. alba*) and black (*S. nigra*), are cultivated; but they sometimes also occur in the wild state on arable land. Both are very similar to charlock (wild mustard) and display their yellow flowers during June to August.

Then there is treacle mustard, but this is sufficiently different to warrant another genus, *Erysimum* (*E. cheiranthoides*). The generic name is from the Greek *eruo*, to draw up, for some species cause blisters. The specific name has the same derivation as both generic and specific names of wallflower (*Cheiranthus cheiri*). The common name treacle is a corruption of *theriaca*, a Venetian medicine of which this plant was an ingredient. Treacle mustard is an annual which grows six inches to two feet high and displays its yellow flowers during June to August. The leaves are long and lanceolate and have irregular margins. The plant is not very common but it sometimes appears on cultivated and waste land and sometimes also in hedgerows.

Another member of the CRUCIFERAE, Dicot., which also favours arable land, especially cornfields, is the wild radish, the progenitor of the cultivated forms. So like charlock is this plant that it is also called jointed charlock or white charlock. But it differs in sufficient detail to warrant a separate genus, *Raphanus* (*R. raphanistrum*), the generic name being Latin for radish, from *radix*, root. This bristly annual grows one to two feet high and blooms during June and July. Its leaves are like those of charlock but smaller. There is a strong tap-root, not so swollen as those of the cultivated varieties. The flowers may be yellow or lilac, or yellow veined with lilac. The fruit is a jointed one-chambered pod with a long beak at its distal end.

One of the very worst weeds on gardens and arable land is the small bindweed, sometimes also known as corn bindweed, and by other names which are also applied to the great bindweed (p. 307). Like the great bindweed, it is a member of the family CONVULVULACEAE, Dicot.; but it is altogether smaller than the great form and is sufficiently different to warrant another genus. In fact, small bindweed is the only British representative of the genus *Convolvulus* itself (*C. arvensis*). It is a perennial



SMALL BINDWEED

Climbing a stem of white bent grass

more often they are a beautiful pink and are delicately scented. They open only when the weather is fine (Plate 13).

which, in the absence of any near-by support, sends out branch stems flattened against the soil surface. If, on the other hand, a tall support, such as an upright plant, is growing near by, then the bindweed climbs by twining its stem around in an anti-clockwise direction. This habit is indicated in the generic name which is derived from the Greek *convolvere*, to twine round. The common name indicates also the strong action involved, for the stem twines firmly around, sometimes several plant stems binding them and holding them as if in a vice.

And round green roots and yellowing
stalks I see

Pale pink *convolvulus* in tendrils creep.

Scholar-Gypsy: MATTHEW ARNOLD

But apart from this the small bindweed is a perfect nuisance, for its roots produce adventitious buds prolifically, and from these long yellow underground stems emerge. In this way does the plant reproduce itself vegetatively, for these stems periodically send up aerial shoots, and they are so tenacious that if only a small bit of one of them be left in the soil it will continue growth. Indeed, this plant has been looked upon in the past as the emblem of obstinacy.

In most respects, the plant organs — stems, leaves and flowers — are like those of great bindweed, but much smaller. The two large bracts which envelop the calyx of the great bindweed are here represented by two much smaller bracts which are inserted well down the flower-stalk. Sometimes the flowers of small bindweed, which appear during June to August, are white, but

The cumbrous bind-weed, with its
wreaths and bells,
Had twined about her two small
rows of peas,
And dragged them to the earth.

The Excursion :
WORDSWORTH

There are two members of the pea family (LEGUMINOSAE, Dicot., p. 95) which are often cultivated for the fodder they produce ; but frequently they appear in the wild state, so they are deserving of mention. One is sainfoin or saint-foin, in some localities called cock's head (*Onobrychis sativa*), whose generic name is derived from the Greek *onos*, an ass, and *brycho*, to eat, and the specific name from *sativus*, Latin for cultivated or sown. The common name, sainfoin, is from the French meaning wholesome hay. The plant appears on cultivated ground and sometimes also in calcareous pastures. It is a perennial growing one to two feet high and displaying its terminal racemes of rose-coloured papilionaceous flowers during June and July. The leaves are each composed of seven to nine lateral leaflets and a terminal one. Sainfoin was introduced into Britain during the seventeenth century for cultivation as fodder : when it occurs elsewhere or on cultivated ground as a weed then it is probably an escape, for it is not indigenous to Britain.



Harold Bantin

SAINFOIN

Cut my St foin, and sold it to John Carpenter. This is the 15th crop. It continues as good as it has been for some years.—*Journal* : GILBERT WHITE

Lucerne (*Medicago sativa*) is another leguminous plant which is often cultivated as fodder. Sometimes it occurs as a weed on cultivated ground and also on railway embankments. It is a perennial growing one to two feet high and displaying its small papilionaceous flowers in loose axillary racemes, purple or blue in colour. The leaves are trifoliate, and each leaflet is slightly notched.

The COMPOSITAE, Dicot. (p. 126) has a fine crop of representatives among agricultural and horticultural weeds during June.

The genus *Anthemis* (from the Greek *anthemon*, a flower) is represented by two plants — stinking mayweed and corn chamomile.



Harold Bastia

STINKING MAYWEED

Stinking mayweed (*A. cotula*), sometimes also known as stinking chamomile, is a not unattractive annual growing six to eighteen inches high and displaying its white flower-heads during June to September. It has a foetid smell and contains an acrid juice. It is very common, especially on arable land in the south of England. Each spreading leaf is deeply divided into grass-like segments. The leaves are densely massed at the base and also borne solitary up the stems. Each flower-head is borne singly on long stalks. The head is cup-shaped as indicated by the specific name which is from the Greek *kotyle*, cup. There is a disk of yellow tubular, hermaphrodite flowers. The ray is made up of conspicuous white ligulate flowers which are sometimes male only and sometimes neuter. There are no styles. The fruit is an achene without a pappus. The plant does not derive its name from the month, for it is seldom, if ever, blooming during May; the name comes from the early belief that it was a useful plant for treating 'mays' or young maidens.

Corn chamomile (*A. arvensis*) is also an attractive agricultural weed, very similar indeed to the stinking mayweed. But it is a larger annual plant growing six inches to two feet high and having a shorter flowering season (June to August). The finely cut leaves are not so spreading.

The flower-heads are similar but frequently the ray flowers are reflexed; this is never so with stinking mayweed. The plant has a pleasant, aromatic smell, something like apples; in fact, the name chamomile is derived from the Greek, meaning ground apple. As in stinking mayweed, the juice is acrid.

Scentless mayweed, also a member of the COMPOSITAE, Dicot., is not so closely related to the stinking mayweed: in fact, it belongs to the genus *Matricaria*, to which another agricultural weed, the wild chamomile, also belongs. The generic name has a curious origin, coming from the Latin *matrix*, womb, since members of it were used for treating uterine ailments in the belief that the plants were dedicated to St. Anne, mother of the Blessed Virgin (*mater cara*, Beloved Mother).

Scentless mayweed (*M. inodorata*), corn feverfew or corn mayweed, is an annual growing one to two feet high and favouring cultivated ground, especially cornfields and wet places, displaying its white flower-heads over a long season — June to October. Its leaves also are divided into many grass-like segments, in fact, more so than those of *Anthemis* species. The flower-heads are larger (about two inches across), and the disk is very convex.

Wild chamomile (*M. chamomilla*) grows twelve to eighteen inches high and blooms during June to August. Its leaves are less divided than those of scentless mayweed. The ray flowers become very reflexed as they get older.

Corn marigold (*Chrysanthemum segetum*) belongs to the same genus as the moon- or ox-eye daisy (p. 324); in fact, the former is sometimes called yellow ox-eye. It is on occasions quite a troublesome weed in cornfields, as indicated by the specific name, from the Latin *seges*, cornfield. It is an annual growing twelve to eighteen inches high and presenting its handsome yellow



Harold Bastin

SCENTLESS MAYWEED



Anne Jackson

CORN MARIGOLD

flower-heads during June to October, though tending to die down during August and September. It is not very common. It is a clumsy-looking plant, though the leaves are very like those of moon-daisy but a little larger. The smaller flower-heads too are like those of moon-daisy except that all the flowers, including those of the ray, are yellow. The entire plant is smooth and glaucous.

The genus *Centaurea*, also of the family COMPOSITAE, Dicot., has already been introduced through the hard-head or black knapweed (*C. nigra*, p. 345); now two other members are appearing, namely, great knapweed and the lovely blue cornflower.

Great knapweed (*C. scabiosa*), in some localities known as matfellow, grows for preference on cultivated ground. It is a perennial attaining a height of one to three feet and displaying its large purple flower-heads during June to September. The plant is in general larger than the black knapweed. The large leaves are more deeply cut. The flower-heads are fundamentally similar, though the ray flowers are larger, more spreading and of a brighter colour. The fringes on the bracts of the involucre are of a lighter colour.

The lovely cornflower or corn bluebottle (*C. cyanus*, from the Greek *kyanos*, dark blue) is very familiar because in all its shades of white, pale blue, dark blue, pink and red it is a favourite in gardens. But the rather rare wild form is usually of the delightful 'cornflower' blue only (though very rarely a deep-purple form occurs), and it sometimes appears in cornfields.

And for the blue that o'er the sea is born,
A brighter rises in our standing corn.

An Invitation to Daphnis: COUNTESS OF WINCHELSEA

The cornflower is an annual growing one to two feet high and appearing in all its floral beauty during June to August. The upper leaves are long and narrow and are arranged on the stem alternately; the lower leaves are much divided. Both stems and the under-surfaces of the leaves are covered with white down.

The tight involucre surrounding the flower-head is made up of green bracts having brown fringed margins. The tubular disk flowers are hermaphrodite and almost purple in colour. Their stamens are irritable and withdraw into the corolla tube if touched. The large, spreading, tubular ray flowers are bright blue, but they are neuter.

Then wait till June is over and
the dogstar's burning;
Wait until the cornflower comes
with harvest-tide;
Watch her in the barley blowing
kisses in the morning,
And tell me what is bluer in the
whole world wide!

The Poor Man's Garden:
MADELEY



Harold Bastin

CORNFLOWER

Another of the spurges, the sun spurge (*Euphorbia helioscopia*), of the family EUPHORBIACEAE, Dicot. (p. 113), now appears upon the scene. It occurs on cultivated ground and in some waste places where the soil is exposed, flowering during June to October. This annual grows six to eighteen inches high. It is fundamentally similar to the wood spurge (p. 114); but is altogether a robust plant with a very large, spreading umbel (p. 368).

Red bartsia is one of the semi-parasitic members of the SCROPHULARIACEAE, Dicot. (p. 226), which grows on arable land and in waste places and dry fields. It is an attractive plant belonging to the genus *Bartsia*, which is named after the seventeenth-eighteenth century Dutch physician J. Bartsch. Red bartsia (*B. odontites*) is an annual growing six to eighteen inches high and blooming during June to September. It is semi-parasitic on grass roots. At one time it was used as a cure for toothache, hence the specific name from the Greek *odous*, a tooth (Plate 13).

The leaves are borne in opposite pairs. Each is long and narrow with toothed margins. The red flowers grow in long, conspicuous, unilateral racemes which appear during June to September. The calyx is a four-toothed, hairy tube. The corolla is tubular also, but opens at the mouth into an arched upper lip and a three-lobed lower lip. There are two long and two short stamens.



SUN SPURGE

Of all the many families represented in June on arable and other cultivated ground, even the primrose family (PRIMULACEAE, Dicot., p. 107) is included. It is represented by the scarlet pimpernel — very common, but none the less lovely. It is the most frequently occurring member of the genus *Anagallis*, a name derived from the Greek *ana*, intensifying particle, and *anagallo*, to decorate, meaning that the plant blooms repeatedly, and such indeed is the case.

Scarlet pimpernel (*A. arvensis*) is a delicate annual which sends branches along the soil and these sometimes grow upwards to a height of anything from six to twelve inches. The scarlet flowers continue to appear from June to November — a long season.

The trailing stems bear leaves in opposite pairs, each consecutive pair being at right angles to each other. Each leaf is sessile and broadly oval with smooth margins (*Plate 12*).

The flowers are borne singly on long, thin, axillary stalks. They close up during the early afternoon, and always during dull weather, which explains why the scarlet pimpernel is sometimes also known as shepherd's or poor man's weather-glass. Each flower has five sepals which are joined to form a long-toothed calyx. The five scarlet sepals are also joined at their bases and then spread out into a five-lobed salver. Sometimes pale pink and even white varieties occur; so also does an exceedingly rare blue variety (classified by some botanists as a separate species, *A. femina*). The fruit is a very efficient capsule (p. 32).

As a medicinal herb, scarlet pimpernel has a proud but suspect history, for it has been accepted as curing hydrophobia, smallpox and fevers.

Watch, little field-mouse, watch where you tread;
Sparks are falling among the grass,
Think not a flower could burn so red.

The Poor Man's Garden: MADELEY

Another conspicuous June weed of cultivated ground is the white or evening campion (*Lychnis vespertina*), a member of the CARYOPHYLLACEAE, Dicot. (p. 99), and a close relative of the red campion (p. 223). It frequents arable ground—a biennial growing one to two feet high and blooming during June to September. In fact, as a late-flowering plant it often brings cheer to an otherwise dreary late September scene. Though fundamentally like the red campion, it is sturdier and indeed much more hairy, though the leaves have not that red tinge that those of red campion have. The white flowers open out towards the evening as indicated by the specific and alternative common names; they are therefore pollinated by night moths. But each flower is only short-lived (Plate 12).

Two members of the UMBELLIFERAE, Dicot. (p. 165), which grow on cultivated ground and elsewhere and begin blooming during June are shepherd's needle and hare's ear. Shepherd's needle (*Scandix pecten-veneris*) is a fairly typical umbellifer and is the only representative of the genus *Scandix*. It is an annual growing four to sixteen inches high and displays its umbels of small white flowers during June to September. The outer flowers of the umbel are irregular in that the petals are of unequal size. But the diagnostic feature of this plant is the very long fruits—sometimes as much as three inches long—which



WHITE CAMPION

Bottom left, male flower; bottom right,
female flower

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stand erect in the umbel, thus giving the appearance of a comb. This is why the plant is sometimes called Venus's comb, and it also explains the generic name *Scandix*, which is probably from the Greek *xaino*, comb: *pecten* is Latin for comb.

The other umbellifer is the much less common and one of the least typical of the family, namely, hare's ear. This grows not only on cultivated ground in calcareous areas but also in waste places. It belongs to the genus *Bupleurum* which derives its name from the Greek *bous*, ox, and *pleuron*, rib, since apparently at one time the plant was used for treating lung diseases in cattle. Other authorities claim that the name originates from the rib-like arrangement of the veins of the leaves.

Hare's ear (*B. rotundifolium*) is an annual growing six inches to two feet high. Its stems are hollow. The glaucous, alternately arranged leaves are not at all like those of most umbellifers, being round or ovoid and slightly pointed at their distal ends though entirely smooth of margin and at their bases completely encircling the stems which bear them.

The fairly large yellow flowers appear during June to July. They are borne in small compound umbels which are subtended by large foliar bracts. Each flower is typical of the family.

Hare's ear is also called common thorow wax or thorough wax because the stem waxes or grows right through the leaves.

The scorpion grasses (p. 248), of the family BORAGINACEAE, Dicot., are represented on cultivated land during June by the field scorpion grass (*Myosotis arvensis*), an annual growing six to eighteen inches high and presenting its blue flowers during June and July. In this species each flower-stalk is exceptionally long; but the inflorescence is typically scorpioid. Field scorpion grass may sometimes also be found in woods.

BORAGINACEAE, Dicot., is also represented by the small bugloss or field alkanet. This plant is not much like viper's bugloss (p. 349); in fact it is a member of a different genus, *Lycopsis*, the only British representative (*L. arvensis*). The generic name is derived from the Greek *lykos*, wolf, and *opsis*, sight, since the flowers are supposed to resemble wolf's eyes — a strange analogy. The alternative common name alkanet indicates that the roots yield a red dye.

This very hairy annual grows six to eighteen inches high and favours not only cultivated ground but also sandy sites in coastal areas. The fairly small, long, triangular leaves are borne spirally on the stem; the radical leaves are larger and oval. The blue flowers, which appear during June to August, are arranged in those scorpioid inflorescences typical of the family. The narrow part of the petal tube is curiously



curved (a diagnostic feature of the plant), and the throat is almost blocked by five white scales.

Basil thyme is a not very important representative of the mint family (LABIATAE, Dicot., p. 158). It belongs to the genus *Calamintha*, which derives its name from the Greek *kala*, good, and *minthe*, mint. Some floras have given this genus the name *Satureia*. Basil thyme (*C. acinos*) is very typical of the family, favouring cornfields and attaining a height of four to ten inches. It may be annual or biennial, presenting its bluish-purple flowers during June to September.

I hesitate even to mention that most pernicious of all farm and garden grass weeds, namely, the couch grass, so have handed over its introduction to Miss Sackville-West whose description surely could not be bettered.

The couch-grass throwing roots at every
node,
With wicked nick-names like its wicked
self,
Twitch, quitch, quack, scutch.

The Garden: V. SACKVILLE-WEST

This grass, loathed by all gardeners and farmers, spreads by means of persistent underground stems which are so difficult to eradicate since they push their way through the soil for long distances, giving off roots at their nodes and periodically throwing up aerial shoots. Even a small portion of such a stem will grow again if left in the soil.

This wretched plant is a member of that mainly very useful family, the GRAMINEAE, Monocot. (p. 170), and it is the only common member of the genus *Agropyron* (*A. repens*), from the Greek *agros*, field, and *pyros*, wheat — though it is a very false form of 'wheat'. Miss Sackville-West has given above the alternative common names, of which quitch is derived from the Anglo-Saxon name for the grass, *cwice*. The flowers, which appear during June to August, are borne in fairly loose spikes. The leaves are typical of the family.



WILD OAT

Harold Bastin

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Any attempt to eradicate this terrible weed must be concentrated on the subterranean portions, otherwise one bit of underground stem left behind might easily result in a dense colony of grass quickly arising from it.

Finally, the wild oat (*Avena fatua*), probably a forerunner of the cultivated oat (*A. sativa*), also a member of the GRAMINEAE, Monocot., sometimes also appears as a weed on cultivated ground. Its generic name is Latin for oat, and the specific name is a diminutive of the Latin *fatuus*, meaning foolish or useless, that is, wild. This annual grows two to four feet high. Its spikelets are green and drooping and are borne in loose panicles. These appear during June and July. There are usually three flowers in each spikelet and the awns are fairly long (p. 371).

OTHER WEEDS WHICH MAY APPEAR IN FLOWER DURING JUNE

(The number following each flower is the page on which it is mentioned or described)

Bindweed, Great, 306	Madder, Field, 181
Bird's eye, 227	Mignonette, 354
Bistort, 335	Mouse-tail, 179
Borage, 350	Nettle, Common stinging, 312
Buttercup, Corn, 248	Nettle, Roman stinging, 313
Buttercup, Creeping, 230	Nettle, Small stinging, 313
Buttercup, Small-flowered, 248	Nightshade, Enchanter's, 288
Campion, Bladder, 334	Pansy, Wild, 246
Chickweed, Small, 99	Penny-cress, 248
Crane's bill, Dove's-foot, 178	Plantain, Greater, 336
Daisy, 127	Plantain, Hoary, 337
Dandelion, 129	Plantain, Lamb's tongue, 336
Deadnettle, Red, 179	Plantain, Ribwort, 337
Gromwell, Corn, 249	Ragwort, 326
Groundsel, 98	Scorpion grass, Field, 248
Heartsease, 246	Shepherd's purse, 97
Ivy, Ground, 158	Sow-thistle, Common, 346
Knapweed, Black, 345	Speedwell, Field, 180
Lamb's lettuce, 181	Speedwell, Germander, 227
Lungwort, 168	Woundwort, Corn, 180

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MOUNTAIN, MOORLAND AND HEATH

NOTHING of importance appears on mountain, moorland or heath during June, though a few interesting rarities present themselves.

SHRUBS

Certain shrubby relatives of more common aboreal plants occur. There is, for example, dwarf dogwood (*Cornus suecica*), a close relative of the common dogwood (*C. sanguinea*, p. 280), members of the family CORNACEAE, Dicot. Dwarf dogwood is a perennial shrub growing only four to eight inches in height and confined to the moors of northern England and to the mountainous regions of Scotland. This species is very common in Scandinavian countries as indicated by the specific name which is Latin for Sweden.

The creeping stems of this perennial send up annual aerial shoots which differ from those of the common dogwood in that the leaves are sessile and there are fewer flowers in each umbel. The white umbels appear during June to August. The red fruits are supposed to stimulate the appetite.

Then there are several dwarf, shrubby willows, all members of the genus *Salix* (p. 150) of the family SALICACEAE, Dicot. They are all confined to mountainous, exposed areas.

The whortle-leaved willow (*S. myrsinites*) is rare and confined to the mountains of southern Scotland. It is a shrub growing one to two feet high and bearing its catkins during June and July.

The woolly willow (*S. lanata*) is also to be found in the same areas, though it is even rarer, being a shrub which grows one to three feet high though more robust than the whortle-leaved form. It bears its floral catkins during the same season.

The veined willow (*S. reticulata*) is also confined to Scotland. It is a smaller shrub growing six to twelve inches high. The net venation is very pronounced.

Dwarf or least willow (*S. herbacea*) is the smallest of all willows, growing only two to six inches high. Again this species blooms during June and July.

All the above willows are of creeping habit.

Another June shrub is the cowberry, a member of the family VACCINIACEAE, Dicot. (p. 253), and so closely related to the bilberry and cranberry as to be placed in the same genus (*Vaccinium vitis-idaea*). The specific name is Latin after a vine which grows on Mount Ida, Crete. This shrub, which grows six to eighteen inches high, and presents its small pink flowers during June to August, is so like the cranberry (p. 481) as often to be mistaken for it. But the fundamental difference lies in the shape of the leaves. Though both are ovate, the broader part is at the distal end in cowberry, whereas in the cranberry it is nearest the leaf-stalk.

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HERBS

Of the freshly flowering herbaceous plants of mountain, moorland and heath in June those which are common are uninteresting, whereas the more intriguing species are either fairly or very rare.

The rose family (ROSACEAE, Dicot., p. 302) is represented on heaths by the tormentil, a member of the genus *Potentilla* to which also silverweed (p. 343) and creeping cinquefoil (p. 343) belong.

Tormentil (*P. tormentilla* or *erecta*) is a perennial sending up erect shoots six to ten inches high. This habit is indicated in the alternative specific name; the other specific name *tormentilla* is a diminutive of *tormentum*, pain, for the woody roots were at one time used for treating dysentery. Unlike most members of the genus, tormentil's leaves are divided into three deeply notched leaflets only (sometimes, but rarely, there are five). The yellow flowers, which appear during June to September, though very like other members of the genus, differ fundamentally in that there are usually only four sepals (and therefore four epicalyx segments) and four petals.

Some botanists recognise a creeping form of tormentil as a distinct species — *P. procumbens*.

The pea family (LEGUMINOSAE, Dicot., p. 95) is represented during June on heathland by the lowly least yellow trefoil or slender clover, a member of the genus *Trifolium* (p. 233). This species, *T. filiforme*, is a slender, prostrate annual (the specific name is derived from the Latin *filum*, thread), never growing more than nine inches high, usually less, and displaying its yellow flowers during June and July. It is very like true shamrock (*T. dubium*, p. 332), though of smaller habit and having fewer — four to six — flowers to each head. The standard of the corolla is deeply notched.

The pink family (CARYOPHYLLACEAE, Dicot., p. 99) presents itself on June heathland through the medium of the heath pearlwort (*Sagina subulata*), which will bloom until August. This plant, like all other pearl-worts (p. 264), is inconspicuous, though apart from this it resembles the stitchworts (p. 157). It is exceedingly small and of tufted habit, bearing its long, pointed leaves in pairs and displaying its small white flowers on stems no more than one or two inches high. The leaves are awl-shaped, as indicated in the specific name which is from the Latin *subula*, awl.

The beautiful Cheddar pink, another member of the CARYOPHYLLACEAE, Dicot., is all too rare, for it is very beautiful. It belongs to the same genus as the garden pinks, namely, *Dianthus*. The common name does not refer to the colour (indeed many pinks are white or of various

other hues) but to the verb 'to pink' or 'to pierce' as suggested by the petals which are deeply notched. The generic name is from the Greek *dios*, god, and *anthos*, flower; indeed, sometimes pinks and carnations are called Jove's flowers. The genus is spread over Europe, Asia and Africa, but it favours sunny habitats in the Mediterranean area.

The Cheddar pink (*D. caesioides*) is a perennial which may be found, but rarely, in a few calcareous places, mainly at Cheddar in Somerset, though even there it is not easy to come by. It is of tufted habit, with masses of long, blue-grey glaucous leaves—small versions of the leaves of garden carnations (the specific name is Latin for blue-grey). The beautiful pink flowers appear on stems six to nine inches high during June and July. They are very like those of the garden pink. The five petals are deeply serrated. There are ten stamens and two styles. This species, wild though it is, is also a favourite in rock gardens.



Harold Bastin

CHEDDAR PINK

Mid the squander'd colour
 idling as I lay
 Reading the Odyssey
 in my rock-garden
 I espied the cluster'd
 tufts of Cheddar pinks
 Burgeoning with promise
 of their scented bloom
 All the modish motley
 of their bloom to-be
 Thrust up in narrow buds
 on slender stalks

Cheddar Pinks; R. BRIDGES.

There are other wild pinks, too, but they are exceedingly rare. The maiden pink (*D. deltooides*) is confined mainly to hilly pastures. A white variety of this grows in parts of southern Scotland. The rare Deptford pink (*D. armeria*) favours sandy and gravelly places; but, rare though it is,

it is widely spread over Britain. The wild pink (*D. plumarius*) and the clove pink or wild carnation (*D. caryophyllus*) sometimes appear on old walls, though they were probably originally garden escapes.

The bell-flower family (CAMPANULACEAE, Dicot.) comprises nearly all late-flowering species, though one representative, the sheep's-bit scabious (sometimes also known as sheep's bit or sheep's scabious) appears on heaths and sandy sites, blooming during June to September. But this is not a typical member of the family, so detailed consideration of CAMPANULACEAE will be deferred (p. 416).

Sheep's-bit scabious is a hairy annual growing six to ten inches high. It is the only common British member of the genus *Jasione* (*J. montana*); the origin of the generic name is doubtful, though it has been suggested that it is connected with the Greek *iasis*, a cure.

The plant's small, oval, wavy leaves form a rosette at the base and they are also borne alternately on the stem. The name scabious is given the plant because the flowers are borne massed in terminal inflorescences superficially like those of true scabious (p. 328), though there is no fundamental similarity at all. Nevertheless, each head of lilac-blue flowers is supported by an involucre of green bracts. Each flower is composed of five small united sepals; five long lilac-coloured petals, free except at their bases; five stamens also united at their bases; and a long style with a cleft stigma borne at the top of a two-chambered ovary. The fruit is a capsule.

The only new member of the family COMPOSITAE, Dicot., to appear on heaths and downs during June is the carline thistle, a plant which does not conform to the popular idea of a thistle at all. It is the only British representative of the genus *Carlina*, a small European genus. The name has several possible derivations. Some say it is after Carolus (Charles V) or Charlemagne because both these historical figures used the plant for medicinal purposes. Others derive the name from the Latin *caro*, to scratch (Plate 14).

The carline thistle (*C. vulgaris*) is a biennial growing six to eighteen inches high, and blooming during June to October. Its long, lance-shaped leaves are deeply toothed and bear sharp spines on their margins. Though the flowers are purple, the entire flower-head (capitulum), which is about one to one and a half inches in diameter, is yellow in appearance because of its curious involucre of bracts. The outer whorls of bracts are green, leafy and prickly. The inner whorls are long and yellow, looking superficially like a row of yellow ray flowers. During dry weather they spread out in the form of a star, but when it is wet they close up. On the Continent, a closely related species (*C. acaulis*) is often hung outside doors and used as a hygrometer. After fertilisation, these tough bracts persist. The purple flowers are all tubular. Growing between them on



Harold Bastin

CARLINE THISTLE



Harold Bastin

WILD THYME

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the disk are other long, yellow bracts, so despite the fact that the flowers themselves are purple the entire flower-head is yellow in appearance.

On dry heaths and banks the wild thyme grows and displays its rosy-purple flowers during June to August; but it is not easily discovered for it is not common. It is a member of the mint family (LABIATAE, Dicot., p. 158) and is included in the north-temperate genus *Thymus* (from the Greek *thymos*, the name for this plant). The wild species is *T. serpyllum* (from the Greek *herpyllos*, wild thyme), and it is smaller than the cultivated herb, *T. vulgaris* (p. 378 and Plate 14).

Wild thyme grows two to eight inches high, bearing its small oval leaves in pairs and presenting its small purple flowers in dense heads. The entire plant emits the well-known aromatic perfume especially in hot weather.

Associated with wild thyme, the red broomrape (*Orobanche rubra*, family OROBANCHACEAE, Dicot., p. 258) may appear, for it is a semi-parasite choosing wild thyme as its host. It grows four to nine inches high and presents its red flowers during June to August.

Among the Monocotyledons which open out on heaths during June are two members of the orchid family (ORCHIDACEAE, Monocot., p. 209). One is the spotted orchis (*Orchis maculata*) which favours damp heaths and open mountainous pastures. It is a fairly conspicuous perennial growing nine inches to two feet high and exhibiting its lilac or purple flowers in long dense terminal racemes during June to September.

The two root tubers of this species are lobed in palmate form. The long, lance-shaped leaves are conspicuously spotted.

The other member of the orchid family is the small or heart-leaved twayblade (*Listera cordata*, which also prefers turfy moors. The plant is a rare, much smaller version of the more common twayblade (p. 211) growing only three to six inches high. As its alter-



Harold Bastin

SPOTTED ORCHIS

JUNE

native common name and the specific name (from the Latin *cor*, heart) imply, the leaves are heart-shaped, whereas those of the common form are oval. The greenish flowers are borne in smaller racemes and appear during June to August.

Among the many heath grasses (GRAMINEAE, Monocot., p. 170), matweed grass (*Nardus stricta*) will be found flowering from June to August. It is a small perennial grass growing two to eight inches high. As its common name implies, it is of tufted habit, and this is also indicated in the generic name which is Latin for matweed or mat grass. The specific name is also indicative of the habit, for it is Latin for close. The spikes of flowers are slender and erect, and they bear sessile, unilateral spikelets.

OTHER FLOWERS WHICH MAY APPEAR ON MOUNTAINS, MOORLAND OR HEATH DURING JUNE

(*The number following each flower is the page on which it is mentioned or described*)

Betony, Wood, 294	Green weed, Petty, 252
Bilberry, 253	Lousewort, Heath, 175
Bird's foot, 255	Milkwort, 339
Broom, 252	Orchis, Butterfly, 297
Broomrape, Greater, 258	Raspberry, 252
Campion, Moss, 250	Red Rattle, Dwarf, 175
Catchfly, Dwarf, 250	Rose, Burnet, 254
Cat's ear, Long-rooted, 328	Rose, Scotch, 254
Columbine, Wild, 217	Sage, Wood, 294
Cow-wheat, Common, 216	Silver-weed, 343
Crowberry, 253	Speedwell, Common, 257
Eyebright, 257	Stitchwort, Heath, 256
Furze, Needle, 252	Stitchwort, Lesser, 256
Germander, Wood, 294	Stork's bill, Hemlock, 255
Gorse, 95	Whin, Petty, 252

WALLS

WALLS, especially old ones, are frequently gay with flowers during June, and perhaps the most conspicuous of them all is the biting stonecrop, though this plant prefers very dry walls. It belongs to a family which we have not so far met, namely CRASSULACEAE, Dicot. — a family of



Anne Jackson

BITING STONECROP

plants which grow in very dry habitats — in Britain on such as old walls, roofs of houses, etc. But the family is not well represented in this country, though it is a fairly large and natural one, being composed of about four hundred and fifty genera, mainly South African in distribution. But even there the plants favour dry situations, especially rocky places. So to most members of the family water economy is all important; therefore the plants store water, especially in their thick, succulent leaves.

There are three common British genera, namely, *Sedum*, *Cotyledon* and *Sempervivum*. The first two appear during this month; the third in July (p. 475).

Biting stonecrop belongs to the genus *Sedum*, a fairly large genus distributed mainly in north-temperate regions and represented in Britain by about ten species. Most species are flat-growing, spreading plants, a characteristic implied in the generic name which is from the Latin *sedeo*, to squat. Some authorities, however, derive the name from *sedo*, to calm, for in olden days members of the genus were planted on roof-tops to counter the effect of thunderstorms.

The commonest British species of *Sedum* is *S. acre*, biting stonecrop, the matted green branches of which cover old walls and whose yellow star-

like flowers make a really lovely sight during June and July. As the specific name implies, the plant has a bitter taste, which also explains the more localised names of wall pepper or poor man's pepper. The plant is a perennial growing three to eight inches high, but spreading over considerable areas once it gets a footing. The very small, bright green leaves are thick and succulent, thus acting as storehouses of water. They are arranged alternately though crowded on the stems; especially crowded are they on the erect flowerless shoots where they actually overlap.

The bright yellow flowers occur in masses, so much so that they have inspired the local name of gold chain. Each flower has five oval, pointed, green sepals, five bright yellow pointed petals which open out into a star when the weather is fine; ten stamens; five carpels which when fertilised form follicles which eventually split along one side to release their seeds.

The honeysuckle, crowding round the porch,
Hung down in heavier tufts, and that bright weed,
The yellow stonecrop, suffered to take root
Along the window's edge, profusely grew,
Binding the lower panes.

The Excursion : WORDSWORTH

Among other stonecrops are the white stonecrop (*S. album*), which favours similar sites to the biting stonecrop and blooms at the same time. It is easily distinguished, for its flowers are white. Orpine or live-long (*S. telephium*) is the largest of the stonecrops, displaying its purple flowers in thickets and waysides during July and August (p. 467). Roseroot (*S. roseum*) grows on rocks in mountainous and coastal areas, especially in the north, and presents its yellow or purple flowers during May to August. It bears larger, flat, oval, fleshy leaves. The roots are thick and knotted and smell like rose-water. The rarer stonecrops include yellow stonecrop (*S. rupestre*), growing on rocks and blooming during June and July; tasteless mountain stonecrop (*S. sexangulare*), presenting its yellow flowers



Harold Austin

ROSEROOT

THE FLORAL YEAR

during July and August; English stonecrop (*S. anglicum*), favouring coastal rocky areas and bearing its white flowers spotted with red during June to August. There are also a few others, all of very localised distribution.

Biting stonecrop and others are favourites in rock gardens. There are, however, many garden varieties having white, yellow, pale-blue, purple and red flowers, and sometimes variegated foliage.

The second genus of the family CRASSULACEAE, Dicot., which is to be found blooming during June, is *Cotyledon*, and this is represented in Britain only by the wall pennywort or navelwort (*C. umbilicus*). This also grows on old walls. It is an extraordinary perennial plant, taller and robuster in habit than biting stonecrop, attaining a height of anything from four to twelve inches.

The entire plant is succulent and fleshy. The alternately arranged leaves are curious, having long fleshy stalks and round thick blades with wavy margins sinking towards their centres where they join their stalks. This characteristic is indicated in all the names: *Cotyledon* is from the Greek *kotyle*, a cup; *umbilicus* is Latin for navel or shallow depression; navelwort signifies the same; and pennywort indicates the shape of the leaf-blades, though each is somewhat smaller than a penny. Children sometimes call the leaves penny pies, and in some parts the plant is known as kidneywort.

The greenish-yellow flowers, which appear during June to August, are pendulous and are borne in long erect racemes. Each flower is fundamentally similar to that of biting stonecrop, except that the petals are not stellate but are joined to form a five-notched tube.

Wall pennywort has figured in medicinal herbals, especially those of the sixteenth century, being recommended for treating burns and scalds. Its juice was also claimed to have soothing properties and was used for treating erysipelas.

This plant is another favourite in rock gardens, though the cultivated form has more golden yellow flowers.



Anna Jackson

WALL PENNYWORT

Apart from the genus of nettles (*Urtica*, p. 312), the only other genus representative of the family URTICACEAE, Dicot., in Britain is *Parietaria*, and this has only one British species, namely, *P. ramiflora*, pellitory-of-the-wall. (Some Floras include the genus *Humulus*, hop, in the same family; but here it is placed in the family CANNABINACEAE, p. 426.)

The generic name of pellitory-of-the-wall signifies its habitat, for it is from the Latin *paries*, wall. The plant favours walls and rocky places. It is a perennial growing six to twenty inches high and having reddish, brittle stems. Both stems and leaves are covered with silky hairs. The leaves are lance-shaped with smooth margins, and they are arranged alternately. The small, greenish flowers appear in dense, axillary clusters during June to September. Unlike those of the nettle, they are hermaphrodite. Each cluster of flowers is supported by three to six united bracts. The individual flower is inconspicuous, for it has no petals, but there are four greenish sepals, four stamens and a single style with a much-branched stigma — for the flower is wind-pollinated (*cf.* nettle). Cross-pollination is ensured since the style develops and ripens first. The four stamens, like those of nettle, suddenly jerk out when ripe. This can be seen by gently inserting the tip of a pencil into the centre of an unfertilised flower.

Among the rock cresses belonging to the genus *Arabis* (CRUCIFERAE, Dicot., p. 95), the hairy rock cress (*A. hirsuta*) is the most common. It grows on old walls, rocks and dry banks and presents its cruciform white flowers in crowded inflorescences during June to August. But it is not very common and still less common than half a dozen other species of this genus which is more familiar to us in the form of many species and varieties which figure in rock gardens. Most of the rock cresses originate from Arabia as the generic name implies. The hairy rock cress is covered with silky white hairs (*hirsuta*, Latin for hairy). There is a rosette of radical leaves and others are arranged alternately on the erect flowering stems which grow nine to eighteen inches high. The leaves are sessile, more or less oblong in shape and have a few marginal teeth. The fruit is a long siliqua, typical of the family.

On old walls and in other dry places, the forerunner of the garden lettuce (*Lactuca sativa*) may be found flowering during June to August. This is the wall lettuce (*Lactuca muralis*). The common name lettuce is from the Middle English *letuse*; the generic name is from the Latin *lac*, milk, for the plant contains a milky white latex. The specific name, of course, indicates living on a wall, from the Latin *murus*.

Lactuca is a composite genus (COMPOSITAE, Dicot., p. 126). There are several wild British species, but *L. muralis* is the only common one. It is an annual, growing one to three feet high and presenting its yellow flower-heads during June to August. The entire plant is smooth.

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The leaves are not a bit like those of most cultivated lettuces; they are simple, yet so deeply and variously cut as to appear compound, with the terminal lobe the largest. Sometimes this plant is known as the ivy-leaved lettuce, though it is difficult to see why.

The yellow flower-heads are borne in angular panicles. Though each flower-head is a true capitulum it is small and looks like a simple flower for there are only five ray flowers present though these are supported by an involucre of green bracts. All the same, each flower is a typical ligulate one, very like that of the dandelion, and having a hairy pappus.

The young leaves of this plant make an excellent salad.

Many different grasses (GRAMINEAE, Monocot., p. 170) will be found growing on old walls though such is not the usual habitat for them. The exception is wall barley (*Hordeum murinum*) which really favours old walls though it sometimes also grows along dry waysides. It is a relative of the meadow barley (*H. pratense*, p. 320), but seldom grows so tall, attaining a height of six to eighteen inches; furthermore it is an annual and not perennial, and its roots are fibrous and not creeping. But it blooms during the same season — June to July.

OTHER FLOWERS WHICH MAY APPEAR ON WALLS DURING JUNE

(The number following each flower is the page on which it is mentioned or described)

Celandine, Greater, 261	Saxifrage, Three-fingered, 183
Pearlwort, Annual, 262	Speedwell, Wall, 183
Saxifrage, Rue-leaved, 183	Toadflax, Ivy-leaved, 260

MOISTURE-LOVING PLANTS, SEMI-AQUATICS AND AQUATICS

DURING June, the midsummer month, the floras of moist meadows, marshes, bogs, sides of streams and rivers and even fully aquatic habits come into their own, for the abnormally high humidity and comparatively low temperature of these habitats are now offset by maximum conditions of light intensity, day-length and warmth.

DAMP MEADOWS AND OTHER HUMID SITES

One of the most popular country plants during June is meadow-sweet or queen of the meadow, a plant which grows in the shaded parts of damp meadows (especially on the edges of woods) and frequently along the edges of rivers, ponds and lakes.

This tall, woody perennial grows two to four feet high and displays its masses of small cream or white flowers during June to September. It is a member of the rose family (ROSACEAE, Dicot., p. 302), and is included in the genus *Spiraea*, to which dropwort (p. 330) and the rare willow-leaved spiraea also belong. This is the true *Spiraea* genus; it must not be confused with the cultivated potted household favourite, also known as *Spiraea*, which is not actually a member of this genus at all (nor indeed of the family), for it is a member of the genus *Astilbe* which belongs to the family SAXIFRAGACEAE.¹ The true *Spiraea* genus is a fairly large, north-temperate one, but the three plants mentioned above are the only British representatives. The generic name is from the Greek *speira*, coil, for the fruits are curiously twisted (Plate 15).

Meadowsweet (*S. ulmaria*) has tall, stiff stems which are tinged with red. The leaves are like those of agrimony (p. 344), that is, divided into large, toothed leaflets between which smaller leaflets are interspersed on a common leaf-stalk. The under-surfaces of all the leaflets are covered with a white down. Each leaflet is shaped somewhat like an elm (*Ulmus*) leaf—hence the specific name.

Though each cream or white flower is small, the plant is very conspicuous when in bloom (June to September) for the flowers are massed in their thousands in dense inflorescences. Each flower is typically rosaceous, having a four- or five-cleft calyx, four or five free petals, numerous stamens and four to nine carpels. The flower is pollinated by insects which are attracted to it by the powerful fragrance which it emits, not by nectar, for it secretes none.



Dugold Sample

INFLORESCENCE OF MEADOWSWEET

¹ *Flowers in Britain*, p. 77.

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The fruit is a collection of splitting follicles.

The fragrance of meadowsweet rendered it popular in Elizabethan days for strewing on the floors of rooms. Then it was sometimes also known as bridewort. In other localities it was known as meadwort for it was infused into mead to give that beverage additional flavour.

The meadow-sweet flaunts high its showy wreath
And sweet the quaking grasses hide beneath.

Summer : J. CLARE

The mint family (LABIATAE, Dicot., p. 158) has a rather rare representative in the damp meadows of June. This is gipsywort which sometimes also grows alongside rivers and streams. It continues in bloom until September. It is a member of the genus *Lycopus*, a small, north-temperate genus whose name is derived from the Greek *lykos*, wolf, and *pous*, foot. Gipsywort (*L. europaeus*) is a perennial which grows one to three feet high. Its leaves are borne in pairs, each pair being at right angles to the next. Each leaf is deeply, but regularly toothed. The small white or flesh-coloured flowers are borne in dense whorls in the axils of the upper leaves. Though typically labiate in structure (cf. white deadnettle, p. 222), the lips of the corolla are not very pronounced; in fact, the flower is more like that of mint (p. 546).

Creeping Jenny, that favourite in shaded rockeries in gardens which so easily gets out of hand, is really a native British wild flower favouring damp situations, especially rocky areas. It has a creeping main stem which gives off roots at the nodes. The plant belongs to the primrose family (PRIMULACEAE, Dicot., p. 107) and is included in the genus *Lysimachia* (p. 216 and Plate 15).

Creeping Jenny (*L. nummularia*) derives its specific name from the Latin *nummus*, coin, from the shape of the shining green leaves which are almost round and borne in pairs. This characteristic is also indicated in the alternative common name, moneywort, whereas the paired arrangement of the leaves is reflected in the more localised name, herb twopence. In the United States, where this attractive creeper is looked upon as a weed, it is called creeping Charlie. In fact, the Americans apply the name creeping Jenny to the common small bindweed, *Convolvulus arvensis*, p. 362.

The bright yellow flowers appear on fairly long axillary stalks during June and July. Since the leaves are borne in opposite pairs the flowers also appear to grow in pairs. Each is very like the flower of yellow pimpernel (p. 216) and yellow loosestrife (p. 503).

Another member of the family PRIMULACEAE, Dicot., is the bastard pimpernel or chaffweed which grows in moist, sandy places. It is rare, and is the sole British representative of the genus *Centunculus* (*C. minimus*).



Both generic and specific names signify the habit of the plant, for the former is derived from the Latin *cento*, a patch, indicating insignificance. This very small annual grows only one to three inches high and bears very insignificant oval and pointed leaves alternately arranged. The minute pink flowers appear during June and July. They are borne solitary in the leaf-axils and are sessile. There are five pink petals united in the form of a five-toothed tube inside which the five stamens are inserted.

Canary grass (GRAMINEAE, Monocot., p. 170) grows in wet places. It is an annual attaining a height of one to two feet and is one of the few members of the genus *Phalaris* (*P. canariensis*). The spikelets are borne in almost globose heads and are pale yellow streaked with green. The grains glisten (as indicated by the generic name which is from the Greek *phalaros*, shining), and these are fed to cage-birds, especially canaries.

MARSHES AND BOGS

In the more water-logged marshes another buttercup (RANUNCULACEAE, Dicot., p. 229) may be discovered. This is the greater spearwort (*Ranunculus lingua*), a perennial which grows two to five feet high and is therefore the tallest of all buttercups. The large, yellow flowers are as much as an inch in diameter and they appear during June to September. The leaves are not like those of most buttercups: they are sessile, long and spear-shaped or shaped like a tongue, as indicated by the specific name, which is Latin for tongue. There are a few blunt teeth on the margins.

There is a lesser spearwort (*R. flammula*) which favours similar haunts but is much smaller, growing only four to eighteen inches high. Its leaf-blades are more oval and they are borne on long leaf-stalks.

Marsh arrow-grass is a Monocotyledon which favours marshes and begins flowering in



Ernest G. Neal

GREATER SPEARWORT

THE FLORAL YEAR

June. It is a rather inconspicuous plant belonging to the family JUNCAGINACEAE, Monocot., a small temperate family of four genera. Arrow-grass belongs to the fairly cosmopolitan genus *Triglochin* which is represented in Britain by two species. The generic name is derived from the Greek *treis*, three, and *glochin*, spine, referring to the carpels, which are three-pointed.

Marsh arrow-grass (*T. palustre*) is a perennial which grows six to twelve inches high and bears long, grass-like leaves. The small, inconspicuous purple flowers grow on long, loose spikes and appear during June to August. Each flower has six perianth segments, six stamens and two carpels.

In more acid bogs a new shrub might claim our attention, though it is only in mountain bogs that it will be found, and there it attains a height of two to three feet. This is sweet gale or bog myrtle, the only British member of the sub-tropical family MYRICACEAE, Dicot. Sweet gale belongs to the genus *Myrica* (*M. gale*). The generic name is from the Greek *myrike*, tamarisk, though there is little resemblance between the two plants (p. 522). The leaves, which are oblong and slightly toothed, emit a pleasant resinous smell especially when rubbed during hot weather; this is implied in the name *gale* which is Celtic for balsam.

The gale's rich balm, and sundew's crimson blush.

The Borough: G. CRABBE

The family MYRICACEAE is closely related to the birch family BETULACEAE (p. 117). The flowers of sweet gale are something like those of birch, being borne in erect catkins which appear during June and July. The male catkin bears broad and pointed bracts each of which subtends two bracteoles and four to eight stamens. The bracts of the female cone each subtend two to four bracteoles and two carpels with two stigmas. The fruit is a small nut, the outer layer of which secretes a wax-like substance.

... and now we came to a trickling streamlet, on whose spongy banks grew great bushes of bog-myrtle, giving a spicy odour to the air.

Cumberland Sheep-shearers: MRS. GASKELL

In moorland bogs, as opposed to those occurring in mountainous regions which afford hospitality to sweet gale, the common cotton grass will soon be adding to the scene with its masses of white, hairy fruit. It begins blooming during June and continues to do so until August. It is not a true grass, though it is a Monocotyledon, belonging to the sedge and bulrush family, CYPERACEAE, Monocot. (p. 270). There are four or five different British cotton grasses all belonging to the genus *Eriophorum*, from the Greek *erion*, wool, and *phoreo*, to bear, referring to the white, woolly fruit.

JUNE

The common cotton grass (*E. polystachion*, meaning many spikes) is a perennial which grows six inches to two feet high. The leaves are grass-like, but they are not tufted in this species as they are in others. The flowers are borne in many spikelets. The perianth of each small flower is composed of long, conspicuous bristles which, after fertilisation, grow out into long white hairs which aid in the aerial distribution of the fruit (p. 49). These soft hairs are sometimes gathered and used for stuffing cushions.

BANKS OF RIVERS, PONDS AND LAKES

The mill-wheel, cheerful drudge, would roll
And splash and drum, but the bright-eyed vole
Would never care for him, would swim
Across his racing waves, and slim
Sharp dace would watch in the quickest gush,
And forget-me-not and flag and rush
Would take up quarters there, boom as he might.

The Gift: for C. M. P.: EDMUND BLUNDEN

Approaching the true aquatic associations, we now come to the banks of running water such as streams and rivers and still water such as ponds and lakes. Here we shall meet many already familiar flowers still in bloom, but a few new arrivals can be expected. Some of these newcomers are very welcome. For example, in June, along the sides of streams, on banks where rills are rising, sometimes also along river banks, the most beautiful of all the scorpion grasses (p. 174) will be found. This is the mouse-ear scorpion grass or what is more popularly known as forget-me-not. Like the other scorpion grasses this plant belongs to the family BORAGINACEAE, Dicot. (p. 272). All scorpion grasses are included in the genus *Myosotis*; several of these have already appeared in bloom (pp. 174, 272). Forget-me-not is *M. palustris*, from the Latin *palus*, a swamp, for that exactly describes this plant's favourite haunt. It is a perennial growing one to two feet high and displaying its lovely pale-blue flowers during June to August (Plate 15).

I love its growth at large and free
By untrod path and unlopped tree,
Or nodding by the unpruned hedge,
Or on the water's dangerous edge
Where flags and meadowsweet blow rank
With rushes on the quaking bank.

On a Bed of Forget-me-nots: CHRISTINA ROSSETTI

There is some doubt about the origin of the name forget-me-not. By some it is applied to alkanet, while others, especially in the west of England, call the germander speedwell (p. 227) forget-me-not; in a few localities the name is used for the rather rare ground pine (p. 214). But most people today mean the mouse-ear scorpion grass (*Myosotis*

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palustris) when they refer to forget-me-not, especially the cultivated forms. It seems that Coleridge had this plant in mind when he wrote of the forget-me-not.

Nor can I find, amid my lonely walk
By rivulet, or spring, or wet roadside,
That blue and bright-eyed floweret of the brook,
Hope's gentle gem, the sweet Forget-me-not.

The Keepsake: COLERIDGE

Tradition has it that a knight was gathering flowers for his lady by the side of a river when he slipped and fell into the water and was drowned; as he sank he cried "Forget-me-not", and that is how this plant got its name.

The blossoms blue to the bank he threw
Ere he sank in the eddying tide;
And "Lady, I'm gone, thine own knight true,
Forget me not", he cried.
The farewell pledge the lady caught,
And hence, as legends say,
The flower is a sign to awaken thought
Of friends who are far away.

All green parts of the forget-me-not, even the sepals, are covered with white silky hairs. The lance-shaped leaves are arranged alternately on the erect stems.

The blue flowers are grouped on long, scorpioid stalks. Each flower is usually blue with small yellow scales at the throat of the corolla tube. But like most members of the family the flowers frequently undergo a colour change. They are often pink when young, then turn blue, then again revert to pink as they get old. The five petals are supported by a five-toothed calyx tube. There are five stamens inserted inside the corolla tube and alternating with the petal segments. The ovary is deeply divided into four segments, each of which forms a small nut after fertilisation. The four ripe nuts remain surrounded by a persistent calyx.

The tufted scorpion grass (*M. caespitosa*, from the Latin *caespes*, turf) is also to be found growing in similar habitats and blooming at the same time. It differs from forget-me-not in that it is of tufted habit, shorter (four to eighteen inches) and having very shiny, smooth leaves.

Among the rarer *habitues* of river-banks and sometimes also damp woods and thickets is the handsome monk's hood, an unusual member of the buttercup family (RANUNCULACEAE, Dicot., p. 229). This rare wild plant (common enough under cultivation) is a perennial which grows one to two feet high. It belongs to the genus *Aconitum*, a large north-temperate genus represented indigenously in Britain only by monk's hood (*A. anglicum*), though other species and varieties are grown in gardens. The generic name is from the Greek *akoniton*, which is the name for the flower,

JUNE

though this was probably derived from *akon*, dart, for arrows were poisoned with the plant's juice. The common name refers to the shape of the upper calyx segment which is the shape of a monk's cowl. There is a rarer local name, wolf's bane, for the entire plant is very poisonous.

No, no, go not to Lethe, neither twist
Wolf's bane, tight-rooted, for its poisonous wine;
Nor suffer thy pale forehead to be kiss'd
By nightshade, ruby grape of Proserpine.

Ode to Melancholy: KEATS

The leaves are palmately divided into five deeply toothed lobes. The flowers which appear during June to August are deep blue and grow in long inflorescences. The blueness of the flower is due to the sepals which have become petaloid. There are five of them. The two lower ones form a platform on which insects may alight. Then two others form wing-like flanges, and the fifth forms the protective hood at the back. There are only two petals and these have become reduced to nectar-containing tubes. There is an indefinite number of stamens which after fertilisation form follicles which split along their upper margins to release the ripe seeds.

The shoreweed, a member of the plantain family (PLANTAGINACEAE, Dicot., p. 336), also grows along river-banks, but it favours the sandy margins of lakes. It is the only British member of the small genus *Littorella*, which has one species in South America and the other in Britain — *L. uniflora*, shoreweed. The generic name indicates the plant's habitat, for it is from the Latin *litus*, shore.

Shoreweed is an insignificant perennial growing one to three inches high and flowering (if at all) during June to August.

There are two forms of this curious plant — that which grows on the lakeside and that which actually grows in the water. The former produces rosettes of grass-like leaves. Its flowers are unisexual and they are borne in groups of three — one a male on a long stalk and the other two sessile females. The male has four green sepals, four green petals forming a tube with four outspread segments, and four stamens on very long stalks. The female is similar, though it has no stamens, but a long style. It is just as well that stamens and styles are long, for the flower is wind-pollinated.

That form of shoreweed which grows in the water bears no flowers but reproduces itself vegetatively by means of runners. Its leaves are more or less erect.

Of the several important Monocotyledons to be found blooming along river-banks and lake-sides during June, one of the most conspicuous is the lovely yellow flag, wild iris or corn flag. This plant belongs to the family IRIDACEAE, Monocot., which was first met, though not described,

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when the crocuses appeared on the scene (p. 134). Though this tropical and temperate family contains well-nigh sixty genera distributed mainly in South Africa and tropical America, there is only one truly indigenous British genus, namely, *Iris* (p. 212). Other genera such as *Crocus* (p. 134) and *Gladiolus* (p. 299) and a few others sometimes occur in Britain in the wild state, though they are not truly indigenous, and of course these and still other genera are cultivated in gardens for their handsome flowers.

The wild iris is *I. pseudacorus*, so named to distinguish it from sweet flag (*Acorus calamus*) (p. 393). The alternative common name, flag, is from the Middle English *flagge*, sword, referring to the sword-shaped leaves. This lovely perennial grows one to four feet high and presents its large, golden yellow flowers during June to August (Plate 15).



Anne Jackson

YELLOW FLAG

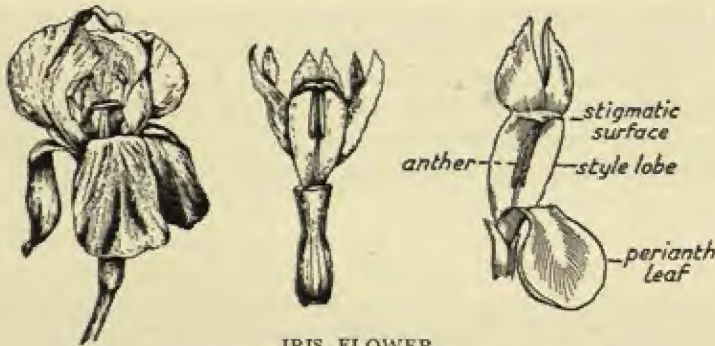
Some, with many an anxious pain,
Childish wishes to pursue,
From the pondhead gazed in vain
On the flag-flower's yellow hue ;
Smiling in its safety there,
Sleeping o'er its shadow'd bloom,
While the flood's triumphing care
Crimpled round its guarded home.

Recollections after a Ramble :

J. CLARE

There is a thick underground stem growing along beneath the water-logged soil and sending up aerial shoots at intervals. The sword-shaped leaves are typical of Monocotyledons, having parallel venation. They are two to four feet long and about an inch in their widest parts. Each is folded longitudinally. Several flowers grow in the terminal inflorescences, but seldom is there more than one out in bloom at a time. Each is surrounded when young by a large green spathe.

Each flower has six yellow perianth segments. The three outer ones are large, broad, oval and wavy and they are reflexed. Alternating with these are the three inner ones, lance-shaped



IRIS FLOWER

Left, complete flower; middle, flower with perianth removed; right, one outer perianth segment, stamen and style lobe. (Left and middle after Professor J. McLean Thompson, right after Lord Avebury)

and spreading. An unusual floral characteristic is the petaloid nature of the three large lobes of the style. These spread out and almost rest on the three inner perianth segments. Each petaloid style lobe arches over one of the three stamens. The outermost part of each style lobe then curves upwards to form a deeply cleft erect wing. The outer (upper) surface of the arching portion is stigmatic. The ovary is composed of three joined carpels and it is three-chambered. The fruit forms a thick, fleshy capsule which opens by three valves to expose the large seeds inside.

The dried seeds of wild iris have been roasted and used as a substitute for coffee (another of the many *ersatz* coffees); the creeping stem yields a black dye.

There is some doubt about the possible role taken by the iris in heraldry. Some claim it was the original *flower de luce* or *fleur de lys*; while others say that this was a true lily. On the other hand, it has been claimed that the heraldic *fleur de lys* was just a bunch of lance-heads or maybe even bees. It seems, therefore, that so far we have no reliable evidence that the iris is the true *fleur de lys* so popular in heraldic designs, especially French.

The sweet flag or sweet sedge also grows along the sides of streams and rivers, but it is no relative of the wild flag, neither is it a true sedge. It belongs to the arum family (ARACEAE, Monocot., p. 160). It is a comparatively rare plant growing in eastern England and is included in the genus *Acorus*, a bi-specific genus confined to Europe and south-east Asia and represented in Britain only by the sweet flag (*A. calamus*). The origin of the generic name is obscure; the specific name is from the Greek *kalamos*, reed.

This plant is a perennial growing three to four feet high and bearing leaves very like those of iris. The flower-stalk appears during June and July. It is very like a leaf for most of its length, but at the top it spreads

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into the form of a spadix which subtends a cone of small male or female yellowish-green flowers. Both sexes have a perianth of six segments.

Stems, leaves and roots of sweet flag have a peculiar fragrance, and from the fleshy, bitter root-stock the drug *calamus* is extracted. The root-stock is also used in some parts as a sweetmeat. It is cut up and boiled and from the syrup produced a candy is prepared.

Two common semi-aquatics are the bur-reeds or bur-weeds, one branched and the other unbranched. These belong to the monocotyledonous genus *Sparganium*, from the Greek *sparganon*, a band, for their leaves are band-shaped. Some Floras include this genus with *Typha* in the family TYPHACEAE, Monocot. (p. 510); but it seems that the genera are sufficiently distinct to warrant separation into two families. *Sparganium* is therefore placed in the family SPARGANIACEAE, a family distributed in temperate and sub-arctic regions of the northern hemisphere and also Australasia, but not Africa and South America.

There are about fifteen species belonging to the genus *Sparganium*, but only two are common in Britain, namely, branched bur-reed (*S. ramosum*, from the Latin *ramosus*, with many branches) and the unbranched bur-reed (*S. simplex*). There is another British species *S. natans*, the floating bur-reed, but this is not so common.

Both bur-reeds favour ditches, though the unbranched form may also be found growing in streams, rivers and ponds. Both bloom during June and July, though the unbranched bur-reed is usually somewhat later than the branched. Both are perennials, the branched growing two to four feet high and the unbranched one to three feet high.

The two species have creeping underground stems which grow in the shallow mud and send up aerial shoots which project well above the water. The stems of one are branched; those of the other are not. The long, sword-shaped leaves have pronounced parallel veins; towards their bases they broaden and sheath around the stem.

The small flowers are borne in globular heads. They are unisexual, both male and female being borne in one and the same head, the male at the bottom of the head, the female above them with sterile flowers at the top itself. Both male and female flowers have a perianth of three small bracts. There are three stamens in the male, and one carpel with an awl-shaped stigma in the female. As might be suspected, such flowers are wind-pollinated and produce dry, single-chambered fruits each containing one seed.

DITCHES, STREAMS AND PONDS

The beautiful flowering rush, which is not related to ordinary rushes, grows in marshes, ditches and alongside streams, displaying its flowers during June and July. It is not a very common plant. Yet it is so



E. J. Bedford

FLOWERING RUSH IN MARSHY HABITAT

Inset, inflorescence and leaves

handsome that it frequently figures in landscape gardening.

Flowering rush is interesting in that it belongs to perhaps the most primitive of all monocotyledonous families, namely, BUTOMACEAE — a family of five marsh and aquatic genera distributed over tropical and

temperate areas but represented only in Britain by the genus *Butomus* of which the sole representative is *B. umbellatus*, the flowering rush. The generic name is from the Greek *bous*, ox, and *temno*, cut, because cattle cut their mouths if they attempt to eat this plant. The specific name indicates the type of inflorescence (Plate 15).

The flowering rush is a perennial growing two to four feet high, and its root-stock creeps beneath the mud of ditches and the sides of streams and rivers. This sends up aerial shoots with long, slender rush- or sword-like leaves. The tall, reddish flowering stalks which reach two to four feet above the water are leafless, but they bear the flowers in conspicuous terminal umbels, each umbel being surrounded by three membranous bracts. There are about a dozen reddish-purple stalked flowers in each umbel, but they do not all open at once. The six perianth segments are about an inch in diameter and there are nine stamens and six carpels. The fruits take the form of splitting follicles.

Another tall herb which grows in ditches is water plantain, no relative of the common plantains (p. 336), but another monocotyledonous plant

belonging to the family ALISMATACEAE, Monocot. It is called plantain because the upright leaves are very like those of common plantain.

The family ALISMATACEAE is small though cosmopolitan in distribution. Water plantain is the only British representative of the genus *Alisma* (*A. plantago*). The plant grows abundantly in the salt marshes in Greece, and this might conceivably explain the origin of the generic name, from the Greek *hals*, salt; though in Britain the plant inhabits brackish water. The specific name explains itself.

Water plantain is a tall perennial achieving a height of one to three feet. The large, plantain-like leaves stand erect on long leaf-stalks above the water. The veins stand out as prominent ribs. The pale, purplish-pink flowers are borne in



Ernest G. Neal

WATER PLANTAIN

large, loose, branched racemes at the ends of tall erect stalks. These appear during June to August. The floral parts are typically monocotyledonous, namely, three sepals, three spreading petals, six stamens, and six or more free carpels. The petals are very deciduous.

Now we come to the true aquatics — those which live entirely in water. Perhaps the most interesting of these is water cress. This plant is a member of the CRUCIFERAE, Dicot. (p. 95), and like many other members of this family it is edible. Water cress is familiar to both town and country dwellers because it is cultivated and sold as a salad plant; nevertheless it is quite common in the wild state, growing in ditches, streams and ponds, but favouring running water.

Water cress belongs to the genus *Nasturtium*, a large cosmopolitan genus represented in Britain by four genera of which *N. officinale*, water cress, is the most common. The origin of the generic name is amusing, for it is from the Latin *nasus*, nose, and *torqueo*, to twist, for the biting taste of the plant stimulates the consumer to twist his nose. In some Floras, the botanical name has been changed to *Radicula nasturtium*, though there seems little reason for this except to prevent confusion, for the so-called garden nasturtium is in no way related to water cress, in fact, it belongs to the genus *Tropaeolum*, of the family TROPAEOLACEAE, a family which is not represented in the wild state in Britain at all.

Water cress is perennial and grows anything from six inches to three feet long. It reproduces itself vegetatively by sending out adventitious roots at the nodes. The shoots often project vertically above the water and it is these aerial shoots which bear the white, typically cruciferous flowers during June and July. The entire plant, both vegetative and reproductive parts, is typical of the family, though, being aquatic, it is entirely free from hairs.

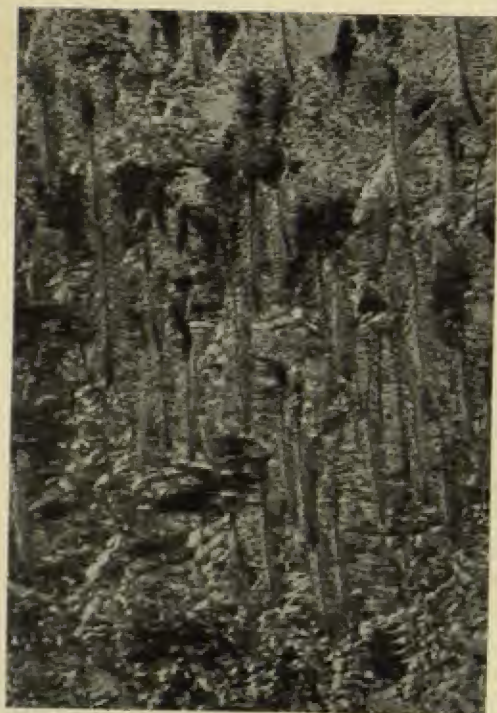
Since the wild form of water cress has a stronger flavour (and its leaves are tinged with brown), country-folk prefer it as a salad to the weaker though larger cultivated type.

All the bloomy flush of life is fled.
All but yon widow'd, solitary thing
That feebly bends beside the plashy spring;
She, wretched matron, forced in age, for bread,
To strip the brook with mantling cresses spread.

Deserted Village: GOLDSMITH

A family represented solely by aquatics in Britain is HALORRHAGINACEAE, and during June representatives of each of the two genera — *Hippuris* and *Myriophyllum* — are to be found flowering in ditches and pond.

Hippuris is represented in Britain only by the mare's tail (*H. vulgaris*), a perennial which grows six inches to two feet, mainly beneath the surface of the water. The generic name is derived from the Greek *hippos*, horse,



MARE'S TAIL

Harold Bastin

and *oura*, tail, for, by mistake, the plant was originally confused with *Equisetum*, the horsetails. This is understandable, for vegetatively, especially in their whorls of leaves, the two genera of plants are alike; but, apart from this, there can be no resemblance, for *Equisetum* is not even a flowering plant genus — it is more related to the ferns.

The mare's tail bears its finely cut leaves in whorls below water. These are borne on stems given off from creeping main stems. To aid respiration, all stems of this plant contain large air spaces. During June and July, some erect branches project several inches above water-level and these bear leaves in whorls which are smaller and less flaccid. They also bear the insignificant flowers. Each flower is reduced to the absolute minimum, for the plant is wind-pollinated. There are no petals and the sepals are reduced to a mere rim. There is one stamen and one carpel.



SPIKED WATER MILFOIL

Harold Bastin

The genus *Myriophyllum* is represented by several species in Britain; *M. spicatum*, the spiked water milfoil, is the most common. Yet even this is not very common, though one might come across it in ponds and ditches. The leaves are borne in whorls and each is divided into grass-like segments. This characteristic is reflected in the common name and in the generic name which is from the Greek *myrios*, a myriad, and *phyllon*, leaf.

JUNE

Water milfoil is perennial, and it sends up aerial shoots above the surface of the water and these bear insignificant flowers during June to August. The flowers are unisexual, though both sexes appear on the same plant. The male flower has a four-lobed calyx, two to four petals and eight stamens. The female flower has a four-lobed calyx, four very minute petals and an ovary composed of four fused carpels with four separate, spreading styles.

Another submerged aquatic, similar vegetatively though not related botanically to the water milfoil and mare's tail, is the hornwort, a perennial which spreads its branches from one to two feet in the water of ditches and ponds. This plant belongs to the only genus (*Ceratophyllum*) of the small aquatic family CERATOPHYLLACEAE, Dicot., a family related to the buttercup family. Hornwort (*C. demersum*) is the only common British species. Its leaves are borne in whorls and they also are subdivided into fine strands which are serrated at their distal ends. The old leaves become translucent and horny, hence the common name and the generic name, from the Greek *keras*, horn, and *phyllon*, leaf: the specific name is from the Latin *demersus*, submerged.

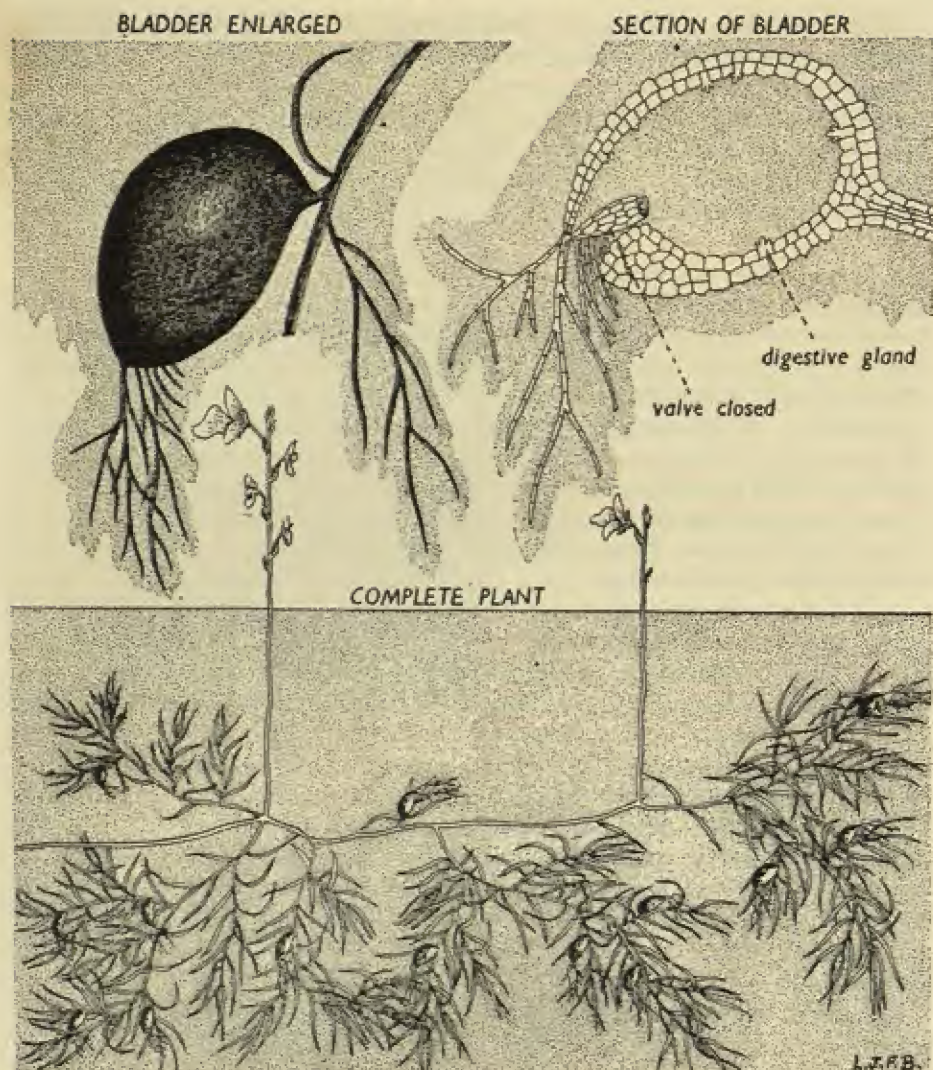
Hornwort has unisexual flowers, both sexes of which appear during June and July. They are borne in the axils of the leaves, and, since all the latter are submerged, so also are the former. In both male and female flowers there is a much-segmented calyx but no petals. The male has twelve to twenty unstalked stamens, and the female a single-chambered ovary with a curved style. Since both sexes of flower are entirely submerged, it follows that pollination is unusual in that it is carried out through the agency of water. The ripe anthers have a kind of float by means of which they rise to the surface after they have broken away from the flower. The pollen grains themselves, when released, have the same specific gravity as water, so they are able to float at any level and are thus more likely to contact the stigmas. The fruit is a nut covered with small spines.

There is another species of hornwort (*C. submersum*) whose fruits are smooth.

During May we encountered that interesting insectivorous plant the butterwort (*Pinguicula vulgaris*) of the family LENTIBULARIACEAE, Dicot.; now we ought to find in flower members of the only other genus of this family, namely, the bladderworts (*Utricularia*). These also are insectivorous, and their animal-catching mechanism is more highly specialised than that of butterwort.

Unlike butterwort which is a terrestrial plant growing in bogs, the bladderworts are completely submerged aquatics favouring brackish water in certain ditches and ponds. The common bladderwort (*U. vulgaris*) is a perennial whose stems stretch for six to eighteen inches

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BLADDERWORT

beneath the water or float on the surface. As in most aquatic plants the leaves are finely divided. It is certain of the leaf-segments which become modified into bladders which form the mechanism for catching small aquatic animal prey. (The generic name is from the Latin *utriculus*, small bladder.) Each bladder opens at its distal end, though this entrance is protected by a valve which opens inwards but not outwards. It is sometimes stated that creatures enter the bladder of their own volition in order to escape pursuing enemies. This is not true, for the

bladder actually captures unwary animals. On the valve itself are a few long, sensitive hairs. When a pond creature unwarily touches these hairs, the valve opens and the walls of the bladder simultaneously and quickly become distended to as much as eighty per cent of their volume, thus sucking the helpless animal into the bladder. Then the valve closes and the animal is trapped. On the inner surface of the bladder are glands which secrete digestive juices. These act on the animal's body which becomes partially absorbed by the plant. All this happens in about twenty minutes when the bladder again reverts to normal.

During June and July the flowers of bladderwort appear on long, thin stalks which project above the surface of the water. The flowers are of a rich yellow colour and similar in structure to those of butterwort (p. 269), the corolla spur being very pronounced.

There is a smaller species of bladderwort known as the lesser or small bladderwort (*U. minor*) which is more localised in distribution, mainly in the north. Its smaller leaves have not so many forked lobes and its flowers are paler yellow in colour.

The pondweeds, with their floating leaves, are familiar sights on the still water of full ditches, ponds and lakes. They are members of the family POTAMOGETONACEAE, Monocot., which comprises one genus, *Potamogeton*, a name which indicates the habit of the plant, being derived from the Greek *potamos*, river, and *geiton*, neighbour.

There are about a dozen species, some growing in the swampy areas of the shore, while others favour deeper water. The result is a variation in habit, mainly in the leaf-forms. For example, the broad-leaved pond weed (*P. natans*, from the Latin for floating) grows near the shore and has large, oval leaves which float on the surface of the water, though sometimes they might even grow erect above it. There are also a few ribbon-shaped submerged leaves. Then there is the narrow-leaved pondweed



Harold Bastin

BROAD-LEAVED PONDWEED

(*P. heterophyllus*), whose many submerged leaves are ribbon-shaped and whose upper floating leaves are oblong. This is indicated in the specific name which is from the Greek *heteros* and *phyllon*, meaning leaves of different kinds. Shining pondweed (*P. lucens*, from the Latin for glistening) has submerged leaves which are lance-shaped, whereas the lance-shaped submerged leaves of curly pondweed (*P. crispus*, from the Latin for curly) have curled margins. Then there is the completely submerged small or slender pondweed (*P. pusillus*, from the Latin for very small) whose leaves are narrow and grass-like. Here, therefore, within a genus is a clear transition of leaf-forms according to habitat. Even more intermediate stages are seen in other species not here described. All the leaves are typically monocotyledonous with parallel venation.

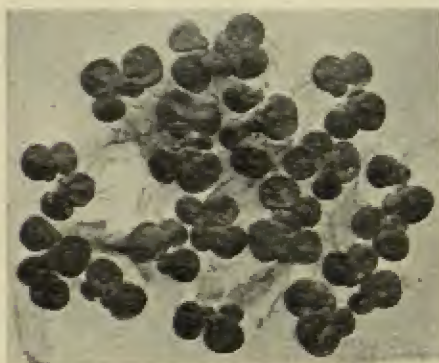
The flowers of most species of pondweed appear in axillary and terminal spikes which project above the water during June and July, though some species are still blooming in August. Each flower is reduced, having only the vestige of a perianth, four stamens and four carpels, which after fertilisation form achenes, each of which has air spaces in its outer walls which render it buoyant and therefore suitable for distribution by water. In due course the enclosed air seeps out and the fruit sinks to the bottom of the pond, where it rests for a time before germinating.

Finally there are the curious duckweeds of which about four species flourish in Britain. These plants betray considerable reduction in vegetative and reproductive parts. The duckweeds are members of the family LEMNACEAE, MONOCOT., a family of free-floating plants; they are not attached to the sides or the bottoms of the ponds or pools where they grow.

The only common genus is *Lemna*, and the most likely species to be encountered (and this is very common) is the small or common duckweed (*L. minor*). This plant is very minute and floats in its thousands on

all kinds of still water—ditches, ponds, the edges of lakes, exposed vats, etc. Less common is the great duckweed (*L. polyrrhiza*).

The plant is much reduced in form. There is no distinction between leaves and stems, but there are two or three small, floating, flat, green fronds about an eighth of an inch across from the centre of which one root is given off in all species except *L. polyrrhiza*, which has many. The root hangs in the water and has a very conspicuous root-cap.



Harold Bastin

GREAT DUCKWEED

Seen from above



At the centre of the upper-surface of the fronds two tiny flowers appear during June to August. The pair is enclosed in a small, scale-like spathe. Each flower is reduced to nothing but one or two stamens and a single-chambered ovary with a short style. But duckweeds frequently reproduce themselves vegetatively by the simple means of fission of the fronds. Sometimes this happens so rapidly, especially during warm, bright weather that the entire water surface seems quickly to become covered with a solid green skin.

OTHER FLOWERS WHICH MAY APPEAR IN DAMP MEADOWS, BANKS OF RIVERS, MARSHES, BOGS, PONDS AND LAKES, OR IN DITCHES, STREAMS AND RIVERS DURING JUNE

(The number following each flower is the page on which it is mentioned or described)

Avens, Water, 287	Lousewort, Marsh, 266
Bitter cress, Hairy, 186	Marigold, Marsh, 186
Bitter cress, Large-flowered, 186	Pearlwort, Procumbent, 264
Blinks, 175	Pennywort, Marsh, 265
Bogbean, 266	Ragged-robin, 186
Buckbean, 266	Red-rattle, Marsh, 266
Buttercup, Celery-leaved, 263	Rocket, Yellow, 265
Butterwort, 269	Salsify, 263
Chickweed, Water, 175	Saxifrage, Alternate-leaved, 187
Comfrey, 272	Saxifrage, Common, 187
Cress, Yellow winter, 265	Saxifrage, Opposite-leaved, 187
Crowfoot, Water, 273	Sedges, Common, 271
Cuckoo flower, 186	Starwort, Water, 188
Grass, Reed meadow, 264	Stitchwort, Bog, 266
Kingcup, 138	Stitchwort, Marsh, 265
Lady's smock, 186	White-rot, Common, 265

COASTAL AREAS

THE keen field naturalist who finds himself:

Where the broad ocean leans against the land.

The Traveller: GOLDSMITH

will not feel the lack of subject material, for there is an important community of plants peculiar to coastal regions, some of which we have already met and will meet again, and others which are new.

THE FLORAL YEAR

CLIFFS AND ROCKS

Samphire is an inhabitant of coastal rocks and sea cliffs. This is a plant much prized by local inhabitants who like to gather it just before it blooms, that is, during May, sprinkle the fleshy leaves with salt and then pickle them. They then make good eating, a fact known to seashoremen for centuries.

How fearful
And dizzy 'tis, to cast one's eyes so low!
. . . half way down
Hangs one that gathers samphire, dreadful trade!
Methinks he seems no bigger than his head.

King Lear, Act IV, Sc. 6: SHAKESPEARE

But gathering samphire is no "dreadful trade" for it usually grows in quite accessible points, mainly at about high-tide mark. The entire plant is powerfully aromatic.

Samphire is a very typical member of the UMBELLIFERAE, Dicot. (p. 165), so far as floral organisation goes. It is the only member of the genus *Crithmum* (*C. maritimum*), and is European in distribution. The generic name is probably derived from the Greek *krithe*, barley, for the fruits of the two plants are superficially similar.

The common name is derived originally from *perce-pierre*, French for rock cress: later this became modified to *perce St. Pierre*, later to *San Pierre*, eventually to *sampier*, and finally to samphire.



Harold Bastin

SAMPHIRE

The plant clings tenaciously to rocks and cliffs by means of a perennial root-stock which grows well into the crevices. The small yellowish-white flowers are borne in compound umbels and they appear during June to August.

The vegetative character of samphire is typical of plants which are subjected to an excess amount of salt water. They have to store what pure water they can get, and this is done in the very fleshy stems and thick glaucous leaves. In this case, the leaves are divided into long, pointed leaflets. The plant is of tufted habit, growing six to twelve inches high.

JUNE

My gold's the lotus, goldilocks,
And patines of the stout samphire
Above unresting blue and foam
That round their crags and castles roam.
No charters fail, no banks suspend
To rob me of my dividend.

My Gold: EDEN PHILLPOTTS

Among the drier rocks (sometimes also among the rocks of mountainous regions) the very localised hoary rock cress or twisted whitlow grass may be found. It is a member of the family CRUCIFERAE, Dicot. (p. 95), and is included in the same genus as the common whitlow grass (p. 135), namely, *Draba*. Like all other members of this genus, the plant is insignificant.

Hoary rock cress (*D. rupestris*, from the Latin *rupes*, rock) is a perennial growing one to two inches high and is very like whitlow grass in general habit, presenting its small, cruciform flowers during June and July.

Farther up, on the top of the cliffs and still further inland, two particularly interesting though rare plants grow — interesting because they are the originals of certain kitchen-garden plants.

One is the sea or wild cabbage which is the progenitor of all the cabbage tribe, members of the genus *Brassica*, of the edible family CRUCIFERAE, Dicot. (p. 95). *Brassica* is actually the Latin for cabbage. Sea cabbage (*B. oleracea*, from the Latin *olus*, a culinary vegetable) is of localised distribution, mainly on the cliffs of the south and west of England. It is a biennial or perennial, growing one to two feet high with somewhat fleshy roots and very smooth, glaucous leaves having lobed and wavy margins, though the upper leaves are sessile with broad bases but not lobed. The large, lemon-coloured cruciform flowers appear during June to August. They are borne in lone inflorescences typical of the family. The fruits are typical siliques terminating in awl-shaped beaks.

Other forms of wild cabbage, also very localised in distribution, include the navew (*B. campestris*), which, apart from the fact that its leaves and stems are glaucous, looks very much like



SEA CABBAGE

THE FLORAL YEAR

charlock (p. 360) and grows in similar habitats; and the Isle of Man cabbage (*B. monensis*), which grows in coastal areas of the west.

The other sea-cliff-dwelling rarity is wild asparagus (*Asparagus officinalis*), a member of the lily family (LILIACEAE, Monocot., p. 205). This plant sometimes also appears in inland waste areas. It is a perennial whose flowering shoots attain a height of six to eighteen inches; in fact, wild asparagus differs only in size from the cultivated form which has descended from it. The wild asparagus grows abundantly in some parts of Europe; in fact, on the steppes of the U.S.S.R. it is so prolific that cattle eat the young shoots as fodder. The plant spreads by means of a thick underground rhizome. The young, thick and fleshy aerial shoots bear small green or purplish scale-like leaves. It is these shoots which are so keenly relished as a vegetable. Then during June and July taller and more graceful shoots emerge from the axils of some of the lowest scale-leaves. These tall shoots bear fine, needle-like phyllodes (see butcher's broom, p. 118), which are borne in the axils of very minute scale-leaves. The yellowish-green pendulous flowers are typically liliaceous and the fruit is a bright-red berry.

THE SANDY HINTERLAND

Coming down to the dry sandy hinterland of the sea-coast, there are several new plants to be sought.

Here, for example, the knotted clover or soft knotted trefoil thrives. It may also be found in some dry, sandy fields farther inland. This plant is a member of the family LEGUMINOSAE, Dicot. (p. 95), and is included with the other clovers (p. 233) in the genus *Trifolium* (*T. striatum*). It is a small, procumbent annual, typical of the genus, having trifoliate leaves and presenting its small, globose heads of rose-coloured flowers during June and July. The calyx of each small flower is striated with prominent veins, hence the specific name.

In similar habitats, the buck's-horn plantain may be found, whereas on the seashore proper, the sea plantain grows. Both are members of the family PLANTAGINACEAE, Dicot. (p. 336).

Buck's-horn plantain (*Plantago coronopus*) is a small, insignificant annual growing one to eight inches high and, unlike all other members of the genus (p. 336), having hairy, pinnatifid leaves; that is, simple leaves so deeply cut as to appear compound. This leaf structure explains the common name, for the leaf looks like a buck's antlers. The inflorescence stalk is not ribbed as most plantain stalks are, and the greenish flowers which appear during June and July are borne in slender, cylindrical spikes, though these vary considerably in shape.

JUNE

The sea plantain (*P. maritima*), which sometimes also appears on the tops of mountains, is a perennial growing one to twelve inches high. Since it inhabits the seashore proper, its leaves are succulent. They are long and linear in shape. The inflorescences, which are similar to those of the hoary plantain (p. 337) though smaller, appear during June to September.

DUNES

On the dunes which back the foreshore of many parts of the coast where there are few rocks, a sparse, though diagnostic, flora occurs.

Marram grass or sea reed (GRAMINEAE, Monocot.) is one of the most characteristic of sand dune plants, and it is now in flower. This grass grows in tufts, and since it has persistent underground stems it serves to bind together the loose sand of the dunes; in fact, it is frequently planted for this purpose (p. 50). Marram grass is the only common member of the genus *Ammophila*, a name descriptive of the plant's habit for it is derived from the Greek *amos*, sand, and *phileo*, to love. This species is designated *A. arenaria*, the specific name also having a similar significance, coming from the Latin *arena*, sand.

The plant is a perennial, growing one to three feet high. The leaves are long and rigid, and, like many other plants which live in or near salt water, they are glaucous, being covered with a pale-green bloom.

The flowers, which appear during June to August, are gathered into tight, terminal cylindrical panicles.

The more common of the two hound's tongues (*Cynoglossum*, p. 295), of the family BORAGINACEAE, Dicot., favours sand dunes, though it sometimes also grows in other waste places. This common hound's tongue (*C. officinale*) is a biennial, growing one to two feet high and therefore not so tall as the green form. Nevertheless, the oval and pointed radical leaves of the former are larger than those of the latter. The leaves on the stems are lance-shaped and sessile.

The reddish-purple flowers, which appear during June and July, are borne in loose, scorpioid inflorescences typical of this family (p. 370). The corolla throat is almost blocked by prominent scales — a further family characteristic. The fruits take the form of small nuts covered with bristles which enable them to cling to passing animals. The entire plant has a disagreeable smell.

SALT MARSHES

In the salt marshes which occur near the coast, another coastal umbellifer (UMBELLIFERAE, Dicot.) may be found. This is parsley dropwort, one of the several dropworts included in the genus *Oenanthe*, but not to be

THE FLORAL YEAR

confused with the rosaceous dropwort, *Spiraea filipendula* (p. 331). The other members of the genus *Oenanthe* bloom later (pp. 495, 515), though most of them favour marshy habitats.

Oenanthe is a fairly large temperate genus which derives its name from the Greek *oinos*, wine, and *anthos*, flower, for the flowers smell of wine. Parsley dropwort (*O. lachenalii*) was named after W. de Lachenal, professor of botany in the University of Basle early in the eighteenth century. It is a tall perennial, growing one to four feet high, and in both leaves and floral arrangement is typically umbelliferous (p. 165), though the leaves are not very finely cut and the roots are fleshy (which is not surprising in view of the plant's habitat). The compound umbels are lax, and consist of small white flowers which appear during June to August.

SEASHORE

Coming now on to the seashore itself we meet some very typical plants.

Among the shingle it should not be difficult to discover the sea catchfly or sea campion, a member of the pink family (CARYOPHYLLACEAE, Dicot., p. 99), and a closer relative of the bladder campion (p. 334) than of the



SEASIDE BINDWEED

Harold Bastin

JUNE

white campion (p. 369). The plant is therefore included in the genus *Silene* (*S. maritima*).

Sea campion is very like bladder campion though it is much smaller, growing only six to twelve inches high. It produces many spreading stems. The white flowers appear during June to August.

Seaside bindweed or convolvulus may also be discovered closely pressed to the hard sand. It belongs to the family CONVULVACEAE, Dicot., and is a nearer relative of the great bindweed (p. 306) than of the small (p. 361). It is therefore included in the genus *Calystegia* (*C. soldanella*), the specific name being a diminutive of *soldan*, sultan, referring to the fringed, crown-like corolla.

Seaside bindweed is a prostrate plant never growing more than about six inches high, but sending out long stems close to the sand. These bear many leaves which are more heart-shaped and less pointed and certainly much smaller than those of great bindweed; furthermore, they are somewhat fleshy. The flowers are typical of the family, pink in colour and appearing during June to August.

Another progenitor of a garden vegetable which favours coastal areas is now in flower. This is the sea or wild beet, from which garden and sugar beets originated. The beets are placed in the genus *Beta*, of the family CHENOPODIACEAE, Dicot. (p. 351). The genus is a small European one and *B. maritima* (sea beet) is the only species indigenous to Britain. The generic name is Latin for beetroot.

Sea beet is a perennial growing one to three feet high. Owing to its habitat, both root and leaves are fleshy. The leaves are large and glossy, those growing from ground-level being broad and spear-shaped, those growing on the stems being smaller and lance-shaped. The small greenish flowers are borne in long terminal spikes and they open out during June to October. At the base of each one flower or pair of flowers there is a very small green leaf. The flower is similar in form to that of Good King Henry (p. 351).

The radical leaves of sea beet, like those of Good King Henry, may be cooked and eaten. They resemble spinach in texture and flavour.

MARINE AQUATIC

Up to about 1931, a very common flowering plant, the grass wrack or eel-grass, could have been found growing submerged in the estuaries and gently sloping sea-shelves around our coasts, and on most of the coast-lines around the North Atlantic and Pacific. Then the plant disappeared very quickly from all areas, except the Pacific coast of North America. It seemed to be suffering from a wasting disease, and though botanists investigated the possible cause (citing oil waste, bacterial and fungal

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attacks), no conclusive answer was obtained, though in some cases parasitic fungi have been disclosed.

This destruction of the 'eel-grass fields' was a serious problem in places, for the plant formed the basic food for many birds such as certain geese, ducks, etc., which suffered in consequence. Furthermore, the dried leaves were used for packing material and for stuffing cushions. It is possible that some 'eel-grass fields' are still holding their own even around the shores of Britain, and that even new 'fields' are developing. But more information is required.

Eel-grass belongs to the monocotyledonous family ZOSTERACEAE comprising two genera. That which contains eel-grass is *Zostera* (from the Greek *zoster*, belt, referring to the shape of the leaves). There are two species, *Z. marina* and *Z. nana*. The former was the most common and was the one which so suddenly disappeared. The latter is apparently immune to fungal attack.

Zostera marina has a creeping stem which penetrates horizontally through the sand and sends up long, ribbon-shaped leaves which are sheathed at their bases. They usually sway beneath the surface of the water, but frequently they reach the surface where they float.

The inflorescence is a succulent spike bearing separate male and female flowers in two vertical rows. These appear during June to August. The inflorescence is enclosed in a sheath-like spathe. Since the flowers are entirely submerged, they are very simple in structure. The male is composed of one stamen only; the female of one carpel with two long flattened stigmas. The pollen grains are of the same specific gravity as the seawater surrounding them, so they can float at any level and thus easily contact the stigmas of the female flowers. The fruit is an achene.

OTHER FLOWERS WHICH MAY APPEAR IN COASTAL AREAS DURING JUNE

(The number following each flower is the page on which it is mentioned or described)

Alexanders, 244	Herb Robert, 224
Alkanet, Field, 370	Pearlwort, Sea, 275
Bedstraw, Lady's, 334	Pink, Sea, 188
Bugloss, Small, 370	Purslane, Sea, 275
Bugloss, Viper's, 349	Scurvy-grass, 275
Crane's bill, Stinking, 224	Silverweed, 343
Henbane, 352	Stork's bill, Sea, 276
	Thrift, 188

PART VIII

JULY

BRITISH flora still persists in its luxuriance during the month of July, for many June flowers continue to appear and a large number of new arrivals present themselves in most habitats. In fact, this is another very busy month for the field naturalist.

Heavy is the green of the fields, heavy the trees
With foliage hang, drowsy the hum of bees
In the thund'rous air : the crowded scents lie low :
Thro' tangle of weeds the river runneth slow.

The Months : R. BRIDGES

This, the seventh month of our modern calendar, was the fifth (Quintilis) of the Roman calendar. The name Julius was substituted for Quintilis after the death of Julius Caesar as a memorial to his name, for he was born during that month. Our Anglo-Saxon forbears called this month *heg-monath*, meaning the month of hay, or the *maed-monath*, for the meads or meadows are in full bloom.

Though the days are somewhat shorter, July is usually the hottest month of the year. A large crop of late-flowering plants break into bloom for the first time, though none of these flowers has captured the imagination of country-folk as the earlier flowers did. This is reflected vividly by Edward Shanks, though it is difficult to subscribe entirely to his views on our July flora.

They come in clearings where the bluebells were,
Tall, courser-petalled weeds and florid bells.
Rank, out of rank soil, their abundance wells,
Flowers that our summer spouts and has no care.
Nor do we care for them. No lovers wear
Posies of willow-herb or meadow-sweet :
Their scent and colour by unheeding feet
Trampled go down and stand no longer there.
Yet, though their earth be rank, they still are hers,
And we who loved the year in her first youth
May wear the emblems of her blowzier prime,
Not judge among her children, better or worse,
But take them, different signs of the same truth,
Which, like our own, is governed still by time.

July Flowers : EDWARD SHANKS

TREES

EARLY in July, if there are any lime or linden trees close by, we must soon become aware of them, for though at all times of the year they are beautiful and delightful trees, the seductive perfume of their flowers now pervades the air of summer evening, sometimes to the exclusion of all other scents.

Sweet lime so hushédly at the height of noon
Diffusing dizzy fragrance from your boughs,
Tasselled with blooms more innumerable
Than the black bees, the uproar of whose toil
Fills your green vaults, winning such metheglin
As clouds their sappy cells, distil, as once
Ye used, your sunniest emanations. . . .
. . . Scatter your fumes, O lime,
Loose from each hispid star of citron bloom,
Tangled beneath the labyrinthine boughs,
Cloud on such stinging cloud of exaltation
As reeks of youth, fierce life, and summer's prime.

The Sprig of Lime: ROBERT NICHOLS

The form of the tree is arboreal perfection, best appreciated in winter when it is naked (p. 66). But lime's delicate leaves too are perfect, and massed on the branches at this time of the year they cast a welcome shade. The tree has been and still is much appreciated in many countries, especially on the Continent of Europe. But space will not allow a fair appreciation of the part that limes have played in contributing to our delight and comfort: the reader is referred elsewhere for this.¹

The lime belongs to the family TILIACEAE, a cosmopolitan family of trees and shrubs but containing few herbs. Although there are about thirty-five genera in the family, only one is indigenous to Britain, namely, *Tilia*, and this comprises only the limes, of which there are three species. The generic name is Latin for lime. The common lime (*T. vulgaris*) grows in parks, gardens and streets. The large-leaved or red-twigged lime (*T. platyphyllos*, from the Greek *platys*, broad, and *phyllon*, leaf) is rarer and confined to rocky woods and some parks. The small-leaved lime (*T. cordata*, from the Latin *cor*, heart, indicating the heart-shaped leaves) appears in some parks.

All lime species bloom during July and August, though if the 'season' be early, lime flowers may open during June.

The beautiful foliage is composed of heart-shaped leaves having serrated margins and pointed apices, bright green on their upper surfaces,

¹ *Trees in Britain*, by L. J. F. Brimble, chap. 21.



LARGE-LEAVED LIME

Top, a twig bearing flowers; bottom, a twig bearing fruit

but dull green on their lower owing to the presence of much soft, white down. The leaves of the large-leaved species are about four inches across in their broader parts, those of the small-leaved species are about half that, and those of the common lime are intermediate between the other two.

Limes do not begin blooming until they are about forty years old. Small and inconspicuous though they are, the flowers emit a most seductive perfume, and this serves as the only (though very effective) attraction for the many humble-bees and other insects which visit them for the large amount of nectar they contain. This is secreted at the base of the sepals.

The limes have now been in bloom some days, attracting flies, butterflies, and Humble Bees, all of which steal a march on the hive Bees, who are comparatively late risers.—*A Bee Melody*: HERBERT BROWN

The inflorescence is a clustered cyme borne at the end of a long stalk which for about half its length at the lower end is fused to a curious oblong, light-green bract. Each flower is borne at the end of a short stalk. It is dull yellow in colour and is made up of five free, boat-shaped sepals; five free, lance-shaped petals; a large, but indefinite, number

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of stamens ; and an ovary having a long style terminating in five stigmas. Usually the stamens ripen before the ovary, thus rendering self-pollination impossible.

The fruits appear during July and August. They take the form of small, more or less spherical, light-brown nuts covered with very fine hairs. Those of the large-leaved lime are more oval and ribbed ; those of the small-leaved are less markedly ribbed ; those of the common lime are not ribbed at all.

The sweet chestnut is about the last of the trees in Britain to bloom, seldom bearing open flowers before the end of July and sometimes not before well into August. This leaves little time for the ripening of the edible fruits, which explains why these frequently fail to form (p. 566). The general appearance of the tree is described on p. 66.

The sweet chestnut is included in the family FAGACEAE, Dicot. (p. 144). It is the only British member of the fairly large genus *Castanea* (*C. sativa*). The generic name is derived from the Greek *kastanon*, after Kastana, a district in Thessaly, where the tree thrives. The specific name implies that the tree is cultivated, which it certainly is especially in Mediterranean countries for its fruit.

The handsome foliage is now at its best. The leaves may be as much as ten inches long. They are simple, lance-shaped and deeply indented with large, regular marginal teeth. The veins too are prominent.

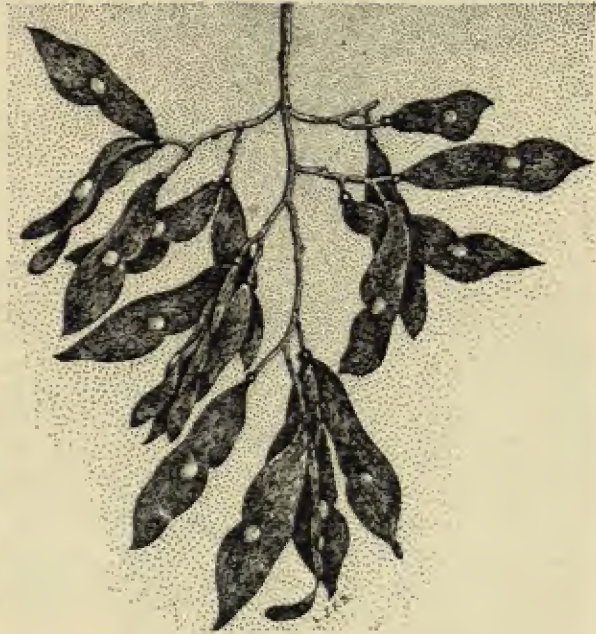
The flowers are unisexual, though, as in all members of this family, both male and female are borne on the same plant. They grow on pendulous stems six to eight inches long which grow out from the axils of leaves looking like long, open, pale-yellow catkins. Those subtended by the lower leaves on the branches bear male flowers only ; those subtended by the upper leaves bear both male and female flowers, the former at the distal end of the catkin, the latter nearer the source of insertion in the axil.

The male flower is composed of five or six sepals enclosing about ten stamens. The female flowers are borne in groups of two or three and each group is surrounded by a scaly cupule. Each flower is exceedingly simple, being made up of a single ovary with several styles. Pollination is effected either by wind or by insects. The characteristic fruit is described on p. 566.

The beautiful tree of heaven, frequently seen growing in parks and gardens, mainly in the south, also blooms during July and August. This tree is sometimes also known as tree of the gods or Chinese sumach. It belongs to the family SIMARUBACEAE, a tropical and sub-tropical family of trees and shrubs. The tree of heaven (*Ailanthus glandulosa*) is not indigenous to Britain. The generic name comes from the vernacular name of the Moluccas which means tree of heaven ; the specific name refers to

the glands on the leaves. The tree is lofty and quick-growing and seems to have withstood well the sooty atmosphere of many British towns since its introduction into this country in 1751. The general form of the tree is described on p. 78.

It is easy to identify a tree of heaven during summer by the leaves, which look like enormous ash leaves, sometimes as much as two feet long. At the base of each leaflet there are several glandular teeth. As autumn approaches, the leaflets drop off separately, followed later by the leaf-stalks.



FRUIT OF TREE OF HEAVEN

The tree of heaven is unisexual, and the sexes are segregated on different plants. The greenish flowers are borne in branched panicles at the ends of branches. The fruits are particularly interesting. They take the form of samaras which hang in bunches like ash 'keys'. They appear during July and are then light green tinged with red. Later on in the year they turn brown. Unlike the ash samara, however, the tough membranous wing of the fruit is drawn out in both directions, so that the seed is embedded in the middle. The twisted wing renders the entire fruit buoyant.

The earliest of the drupe fruits (p. 33) are now beginning to ripen. They are the cherries, and all the wild forms (p. 192) are now in evidence, though most varieties of cultivated cherry were probably ripe in June.

OTHER TREES WHICH MAY BE IN BLOOM DURING JULY

(The number following each tree is the page on which it is mentioned or described)

Buckthorn, Alder, 203
Buckthorn, Purging, 203
Dogwood, 280
Elder, 278

Elder, Dwarf, 282
Guelder rose, 283
Holly, 200
Tulip tree, 278

WOODS AND THICKETS

THE ever-popular campanulas and Canterbury bells of our gardens present themselves in June, and the family to which they belong, that is, CAMPANULACEAE, Dicot., also offers its first wild representative during that month, namely, sheep's bit scabious (p. 376). But the family is composed mainly of later-flowering plants, so now is the month to look for the more showy representatives.

The family CAMPANULACEAE is a fairly large one composed mainly of herbs distributed through tropical and sub-tropical regions. The family is fairly easy to recognise, for the flowers are campanulate or bell-shaped. Though there are several wild genera, the most characteristic and common is *Campanula* itself (from the Latin *campanula*, little bell). This is represented by the harebell of heathy places (p. 484) and the various bell-flowers, some of which favour woods and thickets. The different species and varieties of Canterbury bells and campanulas of our gardens are also members of the same genus.

The largest bell-flower is known as the giant bell-flower, giant bluebell or throatwort (*C. latifolia*, from the Latin *latus*, broad, and *folium*, leaf). This is a conspicuous plant when displaying its large, loose racemes of blue (sometimes, though rarely, white) flowers during July to September. This species favours moist woods and bushy places. It flourishes best in the north.

The *Campanula latifolia*, grand throatwort, or Canterbury Bells, grows in profusion on the beautiful banks of the River Greta.—*Rokeby*: SCOTT

It is a perennial growing three to five feet high. The large, broad leaves are shaped like elongated hearts and they are doubly serrated. Those near the base are stalked; those further up the stems are sessile.

The flowers are borne singly in the axils of the leaves, forming loose racemes sometimes a foot long. There are five, united, pointed and hairy green sepals. The five blue (sometimes white) petals are fused to form a bell with five recurved, pointed lobes at its rim. The bases of the five stamens are fused with the ovary wall. The ovary has a long, hairy style. The fruit is a large, dry capsule with valves near the base. They are in this unusual position because as the fruit ripens it becomes pendulous, thus bringing the valves to the top. As the dry capsule sways in the wind the seeds are thrown out in pepper-box fashion.

The nettle-leaved bell-flower or bluebell (*C. trachelium*) is a smaller perennial growing one to three feet high and favouring woody areas

where it blooms during July to September. This species is very hairy. Like the former species, it was once used for treating throat troubles, hence the alternative common name of the former (throatwort) and the specific name of the nettle-leaved species which is from the Greek *trachelos*, throat. The flowers of the nettle-leaved bell-flower are purplish-blue and are borne sometimes in pairs and sometimes singly in the axils of the leaves to form a long, loose raceme (Plate 16).

The ivy-leaved bell-flower, which also thrives in moist woods, and sometimes also on more open turfy heaths, belongs to a different genus—*Wahlenbergia hederacea*. It is named after the nineteenth-century Swedish botanist, G. Wahlenberg. The generic name is derived from the Latin for ivy, *hedera*, for the small leaves are shaped like those of lobed ivy. This plant is comparatively rare and is not very conspicuous, for it is small and of a creeping habit. It presents its pale-blue flowers during July and August.



Harold Bastin

NETTLE-LEAVED BELL-FLOWER

The snapdragon family (SCROPHULARIACEAE, Dicot., p. 226) is represented in moist woods and thickets and in shaded hedgerows and other moist places by the common but not very inspiring knotted figwort. This and the water figwort (p. 504) are the two most common British representatives of the large north temperate genus *Scrophularia*, so named because at one time it was used as a specific for scrofula.

Knotted figwort (*S. nodosa*) is an unimpressive perennial which grows one to two feet high and presents its dull, brown or purple flowers during July to September. Its root-stock produces tubers and the aerial stems are square in cross-section. The leaves are arranged in pairs, each pair at right angles to the next. Each is shaped like an elongated heart with irregularly toothed margins.

The flowers are arranged in loose racemes at the tops of the erect stems. The calyx takes the form of a fine-toothed tube. The petals, brownish or dingy purple in colour, form a tube with two lips almost

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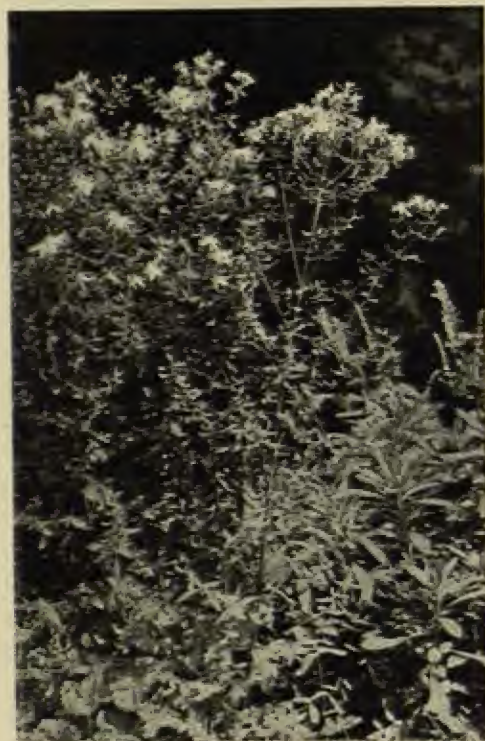
globose in form. The upper lip is two-lobed, and the lower lip three-lobed. The tube itself shades into orange. The flower is pollinated by wasps which seem to be attracted by its unpleasant smell.

A new family, namely, HYPERICACEAE, Dicot., now enters upon the July scene with a flourish, for the flowers of most of its members are bright and conspicuous. The family is represented in Britain by one genus only, namely, *Hypericum*, a name derived from the Greek *hyper*, over, and *ereike*, heath, for a number of species favour heathy habitats. There are about a dozen British species, most of them commonly known as St. John's worts, after St. John the Baptist whose name is associated with Midsummer Day. This name was given before the change in the calendar, that is, when the St. John's worts were June flowers. The tutsans — *H. androsaemum* and *H. elatum* — are inhabitants of thickets and hedgerows and they frequently begin flowering in June.

One of the most common St. John's worts is the perforated species (*H. perforatum*), so called because its leaves contain minute oil glands which look like pale-green pin-pricks especially when the leaf is held up to the light. These oil glands give the plant the pungent smell which one usually associates with most St. John's worts, though not all species have it. More locally the plant has been known as balm of warrior's wounds and herb of war because some say its juice was considered good for treating wounds, though others attribute these names to the fact that the leaves themselves look as if they have been pierced in many places.

The perforated St. John's wort grows in a variety of habitats — dry woods and thickets, hedgerows, heaths and even open dry fields. It is a perennial achieving a height of one to two and a half feet. The oval, pointed, sessile leaves are borne in opposite pairs on stems which have two longitudinal ridges.

The fairly large yellow flowers appear during July and August. They are borne on stalked



Ernest G. Neal

PERFORATED ST. JOHN'S WORT

branches in the axils of the upper leaves and together form terminal yellow corymbs. Each star-like flower has five small, green, separate sepals; five golden-yellow, free, lance-shaped petals; many orange-coloured stamens joined to form three loose bundles (a curious characteristic); and a single ovary with three styles. The fruit is large and conspicuous, taking the form of a long and pointed, multi-chambered, golden-brown capsule, which when ripe splits to release its seeds. This species, like some other plant and animal introductions, is proving to be an agricultural pest in Australia (Plate 16).

Like many other wild plants, St. John's wort has been recommended in the past for the treatment of certain ailments.

. . . commends hypericum, or St. John's Wort gathered on a Friday in the hour of Jupiter, when it comes to his effectual operation (that is, about the full moon in July); so gathered and borne, or hung about the neck, it mightily helps this affection, and drives away all fantastical spirits.

Anatomy of Melancholy: BURTON

The hairy St. John's wort (*H. hirsutum*) is also an inhabitant of woods and thickets. It is a slightly taller perennial growing one to three feet high, and its stems and leaves are covered with hairs. The leaves are borne on short stalks. They also contain oil glands. The yellow flowers are somewhat smaller than those of *H. perforatum*, and they are massed into denser heads. This species blooms during July and August.

Sometimes one comes across the large-flowered St. John's wort blooming in woods and plantations; but this is the commonly cultivated species and is probably a garden escape. It is also known as rose of Sharon and Aaron's beard (*H. calycinum*, from the Greek *kalyx*, cup). This shrubby, creeping perennial grows six to eighteen inches high, and its singly borne flowers are sometimes three to four inches across. The petals are heart-shaped, and there are only three, not five, styles.

Tutsan (*H. androsaemum*) is not very common. It favours woods and thickets and blooms earlier than the others, sometimes even in June and then on into August. Its leaves are larger but sessile and the yellow flowers are borne in heads smaller than those of the hairy species. The petals are very deciduous. The large, spherical capsular fruit contains a red juice as indicated by the specific name from the Greek *aner*, man, and *aima*, blood. The leaves have a very strong, resinous smell.

Angelica (*Angelica officinalis*) is cultivated in some herb gardens, for its leaf-stalks are used in confectionery; but there is also a wild species of angelica (*A. sylvestris*) which grows in moist woods and blooms during July and August. The plant belongs to the UMBELLIFERAE, Dicot. (p. 165). The generic name is from the Latin *angelus*, angel, for the plant is supposed to have valuable medicinal virtues.

Angelica sylvestris is a large perennial growing two to nine feet high and blooming during July and August. It is a fairly typical umbellifer



Harold Bastin

ANGELICA

bearing conspicuous compound umbels of small flowers, white tinged with pink. The compound leaves, however, are not deeply cut but are composed of oval, serrated leaflets. The furrowed stem is tinged with purple and covered with small hairs.

The large burnet saxifrage which blooms in woods and bushy places during July to September is also a member of the UMBELLIFERAE, Dicot. So it must not be confused with the true saxifrages (SAXIFRAGACEAE, p. 183), though there is little likelihood of this for the plants are vastly different.

The uncommon large burnet saxifrage belongs to the genus *Pimpinella* (*P. major*), the generic name being a corruption of the Latin *bipinnula*, for the plant has bipinnate leaves. The plant grows

two to four feet high. The small white flowers are borne in compound umbels typical of the family. The lowest leaves are compound and consist of three or four pairs of oval, deeply serrated leaflets and a terminal one. These leaves farther up the stem are divided into leaflets which are again subdivided into pinnae.

The common gromwell or grey millet (*Lithospermum officinale*), close relative of the corn gromwell (p. 249), now appears in bloom in woods and thickets, though it also favours dry waste and stony places. It continues to bloom during August. It is a member of the forget-me-not family (BORAGINACEAE, Dicot., p. 272). The generic and common names are explained on p. 249. Unlike corn gromwell, the common species is perennial and is a taller and more hairy plant attaining a height of one to three feet. The leaves are lance-shaped and wavy. The flowers are small and yellowish-white in colour. They are borne in scorpioid inflorescences (p. 370), but this curious shape is not so pronounced here as in the scorpion grasses. Each flower is fundamentally similar in structure to that of the forget-me-not, but there are no scales at the throat of the corolla and the sepals are free except at their bases. The seeds are very highly polished, since they contain a large proportion of silica.

The family BALSAMINACEAE, Dicot., is a small one comprising herbs with watery, translucent stems and distributed over Asia, Africa and Europe and North America. They are especially numerous in India. The main genus is *Impatiens*, and species and varieties of this are cultivated in gardens and green-houses in Britain for their very showy flowers. The flower itself is very irregular. One of the five sepals is hooded and spurred: sometimes two of them are aborted. Of the five irregular, highly coloured petals, the two lateral ones are united. Sometimes there are only three petals. There are five stamens and five stigmas but no styles.

The rare yellow balsam or touch-me-not (*Impatiens noli-tangere*) is an elegant annual growing one to three feet high and favouring rocky and shady woods, mainly in the north. The conspicuous yellow flowers appear during July to September. The large leaves are broad and lance-shaped and have fairly deeply serrated margins. The ripe fruit capsule is very turgid, and when touched the valves roll up violently, thus scattering the seeds far and wide. This is reflected in both generic and specific names, for *Impatiens* is Latin for impatient, and *noli-tangere* is from the Latin *nolo*, wish not, and *tango*, to touch.

Another rare species, *I. biflora*, grows along river-banks (Plate 16).

Golden rod, a member of the family COMPOSITAE, Dicot. (p. 126), is not very common in the wild state, though varieties of it are very popular for autumn flowering in gardens. Yet there is a wild species which grows in woods and thickets and sometimes on heaths. It is the only representative of the genus *Solidago* (*S. virgaurea*) to be found in Britain, though there are a couple of even rarer sub-species. It is not the same in the United States, as Matthew Arnold noted when visiting that country in 1885. Writing from there he said:

A curious thing is our garden Golden-rod of North England and Scotland, which grows everywhere, like the wild Golden-rod with us. They have more than thirty kinds of *Solidago*.



Harold Bastin

YELLOW BALSAM



Harold Bastin

GOLDEN ROD

narrower. Both tubular disk and ligulate ray flowers are golden yellow. There is only a single row of ray flowers, with few flowers in the ray.

The broad-leaved helleborine is about the only Monocotyledon which appears in bloom for the first time in July. This plant grows in woodlands and continues blooming until September. It is a member of the orchid family (ORCHIDACEAE, Monocot., p. 209), but is sufficiently different from the other helleborines (*Cephalanthera* species, p. 210) to be placed in a different genus, namely, *Helleborine* (formerly *Epipactis*). The broad-leaved helleborine (*H. latifolia*) is a perennial which grows one to three feet high. The large leaves grow alternately on the stem; they are very broad, oval and pointed, with pronounced ribs. The flowers are borne in long racemes. Each is fairly small, green with purple and yellowish-white markings.

Today, American botanists recognise about ninety different species in their country; and some of these are not very welcome, for their pollen is one of the main causes of hay fever. Yet the plant is also supposed to have medicinal virtues as indicated by the generic name, which is from the Latin *solido*, to make solid or to heal. The specific name is very descriptive, coming from the Latin *virga*, twig, and *aureus*, golden.

The plant is so named because its erect stem is tough and bears massed paniced racemes of golden flowers. When growing in a wood, this perennial reaches a height of thirty inches; when the heath is its habitat it often grows little more than six inches. The flowers appear during July to September. The leaves are broadly lance-shaped, somewhat hairy and slightly toothed. The upper ones are

JULY

OTHER FLOWERS WHICH MAY APPEAR IN WOODS AND THICKETS DURING JULY

(The number following each flower is the page on which it is mentioned or described)

<p> Avens, Water, 287 Avens, Wood, 287 Betony, Wood, 294 Bird's nest, Yellow, 296 Bramble, 423 Bugle, 214 Centaury, Common, 338 Clematis, 425 Corydalis, White climbing, 295 Cow-wheat, Common, 216 Crane's bill, Stinking, 224 Crowfoot, Wood, 156 Foxglove, 284 Garlic, Broad-leaved, 207 Germander, Wood, 294 Gladdon, 212 Gladiolus, 299 Goldilocks, 156 Grass, Reed meadow, 264 Hemlock, 291 Hempnettle, Common, 455 Herb Robert, 224 Hound's tongue, Green, 295 Iris, Stinking, 212 Lily, Turk's cap, 299 Loosestrife, Wood, 216 Nettle, Common stinging, 95 </p>	<p> Nettle, Roman, 95 Nettle, Small stinging, 95 Nightshade, Deadly, 289 Nightshade, Enchanter's, 287 Orchis, Bird's nest, 298 Orchis, Butterfly, 341 Orchis, Fly, 210 Orpine, 467 Pimpernel, Yellow, 216 Ramsons, 207 Rose, Field, 305 Sage, Wood, 294 Sanicle, Wood, 293 Solomon's seal, 298 Star of Bethlehem, Spiked, 167 Stitchwort, Greater, 157 Stitchwort, Wood, 215 Strawberry, Wild, 227 Strawberry, Wood, 227 Traveller's joy, 425 Twayblade, 211 Valerian, Great, 290 Vetch, Tuberous bitter, 215 Willowherb, Broad smooth-leaved, 287 Wintergreen, Lesser, 295 Wood-rush, Great hairy, 211 Woundwort, 180 </p>
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CANOPY OF HEDGES

AGAIN the rose family (ROSACEAE, Dicot., p. 302) is in evidence in the hedgerows, for as the wild rose bids farewell the bramble or blackberry begins its long flowering season which goes well into September, sometimes even October. In fact, flowers frequently occur on the same sprays which are already bearing green, red and black fruits. Though not so showy when in bloom (for bramble flowers are much smaller than those of the wild rose), the bramble is yet a typical rosaceous shrub. It

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is a member of the genus *Rubus*, a genus which contains many species and varieties distributed mainly over north-temperate areas and yielding edible fruits. Here we come up against a real difficulty, for botanists are not agreed among themselves as to what shall be considered a distinct species and what a mere variety. By general consent, however, the ordinary common blackberry is *Rubus fruticosus*. Then there are the wild raspberry (*R. idaeus*, p. 252), the dewberry (*R. caesius*, p. 435), the cloud-berry (*R. chamaemorus*) of high moors, the stone bramble (*R. saxatilis*) of the mountainous districts of the north and west, and the different garden forms including the loganberry. The number of species of wild bramble in Britain alone has been placed as high as ninety-nine. Another authority looks upon some of these as mere varieties and claims only forty-six species, whereas still another has reduced the total to four species with twenty-two sub-species and varieties. It is fairly certain, however, that, despite the obvious differences encountered among the varying forms of bramble, there is no mistaking the plant whether it be a compact shrub or a widely scrambling climber, whether it has white flowers or pink ones, or whether it has large, luscious fruits or small, 'seedy' ones. For our purpose we shall consider the common species of blackberry, *R. fruticosus*. The generic name is Latin for bramble, from *ruber*, red; the specific name is Latin for bushy, and that the plant certainly is. Most forms of blackberry favour hedgerows; others grow in woods and even open fields.

The woody stems of the blackberry are covered with recurved hooks, though the number of these varies. They also appear on the leaf-stalks and with their help the plant scrambles and climbs over hedges and even up trees. The plant easily reproduces itself by means of stolons, that is, branches which arch over and take root where they touch the soil (p. 15). This characteristic renders the blackberry a dangerous agricultural pest, for once it becomes thus established it is difficult to eradicate. In New Zealand, where it was introduced, it is looked upon as the worst of all agricultural pests. Once upon a time advantage was taken of this characteristic of stolon growth and brambles were used for binding down the grass mounds over graves, thus protecting the graves from browsing animals and careless humans. Briars, too, have been utilised for a similar purpose.

[Little Nell] loitered from grave to grave, now stopping to replace with careful hands the bramble which had started from some green mound it helped to keep in shape.—*The Old Curiosity Shop*: DICKENS

Brambles are certainly persistent, for not only have they a tough vegetative habit, but they also have a very long flowering season, they usually bear heavy crops of fruits (p. 575), and their leaves sometimes persist throughout the winter, though they often turn bright crimson during autumn and then fall.

[They] bear the wild works of winter best. Given only a little shelter, in the corner of the hedges or under trees and copses they retain green leaves till the buds burst again. The frosts tint them in autumn with crimson, but not all turn colour and fall.—*The Open Air*: JEFFERIES

The leaf is compound and is usually divided into three (sometimes five) oval, pointed and serrated leaflets. On the leaf- and leaflet-stalks and sometimes even on the back of the mid-ribs there are usually many hooks.

The flowers, which may be white or various shades of pink, are borne in clusters each on a separate stalk which also bears hooks. The floral receptacle is slightly elevated. There are five free, recurved sepals; five free petals; many free stamens; and many free carpels. The fruit appears late in the season and continues well into the autumn.



Harold Bastin

BRAMBLE

It is described and illustrated on p. 575.

Though woodbines flaunt, and roses glow
O'er all the fragrant bowers,
Thou needs not be ashamed to show
Thy satin-threaded flowers.

To the Bramble Flower: EBENEZER ELLIOTT

Where the soil is rich in limestone or chalk, the wild clematis, traveller's joy or old man's beard abounds, often smothering the hedges with its seemingly endless fibrous stems climbing and clinging by means of twisting leaf-stalks. It also flourishes in woods. So strongly does this plant grow on some chalk downs, especially in the south-east of England, that it climbs many feet and produces stout stems four to six inches in diameter. A visit to some of the woods in Surrey, for example, will prove Bentham and Hooker's claim that this plant is "the only indigenous plant which may give a faint idea of the bush-ropes of the tropics". Wild clematis does not occur north of the Midlands. The plant is never more conspicuous than when bearing its hoary fruit (p. 578) and then it is more appropriately called old man's beard; but now it is in flower, and though

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the blooms are very inconspicuous, being greenish-white, the beautiful leaves are often so thickly massed as to hide entirely the hedge proper. Then it is sometimes known as Virgin's bower.

The clematis, the favour'd flower
Which boasts the name of Virgin-bower.

The Lady of the Lake : SCOTT

Over the hills and far away
The road is long on a summer day ;
Dust glares white in the noontide heat,
But the Traveller's Joy grows strong and sweet,
Down the hollow and up the slope
It binds the hedge with a silken rope.

Vespertilia : R. MARRIOTT-WATSON

It may be difficult to believe on casual observation that wild clematis belongs to the buttercup family (RANUNCULACEAE, Dicot., p. 229), but such is the case. It is the only wild representative in Britain of the very large genus *Clematis*, though several species are cultivated in parks and gardens as ornamental scramblers, often having very large and very conspicuous flowers. The generic name is from the Greek *klema*, tendril ; this plant has no tendrils but the Greeks gave the name *Clematis* to various climbing plants.

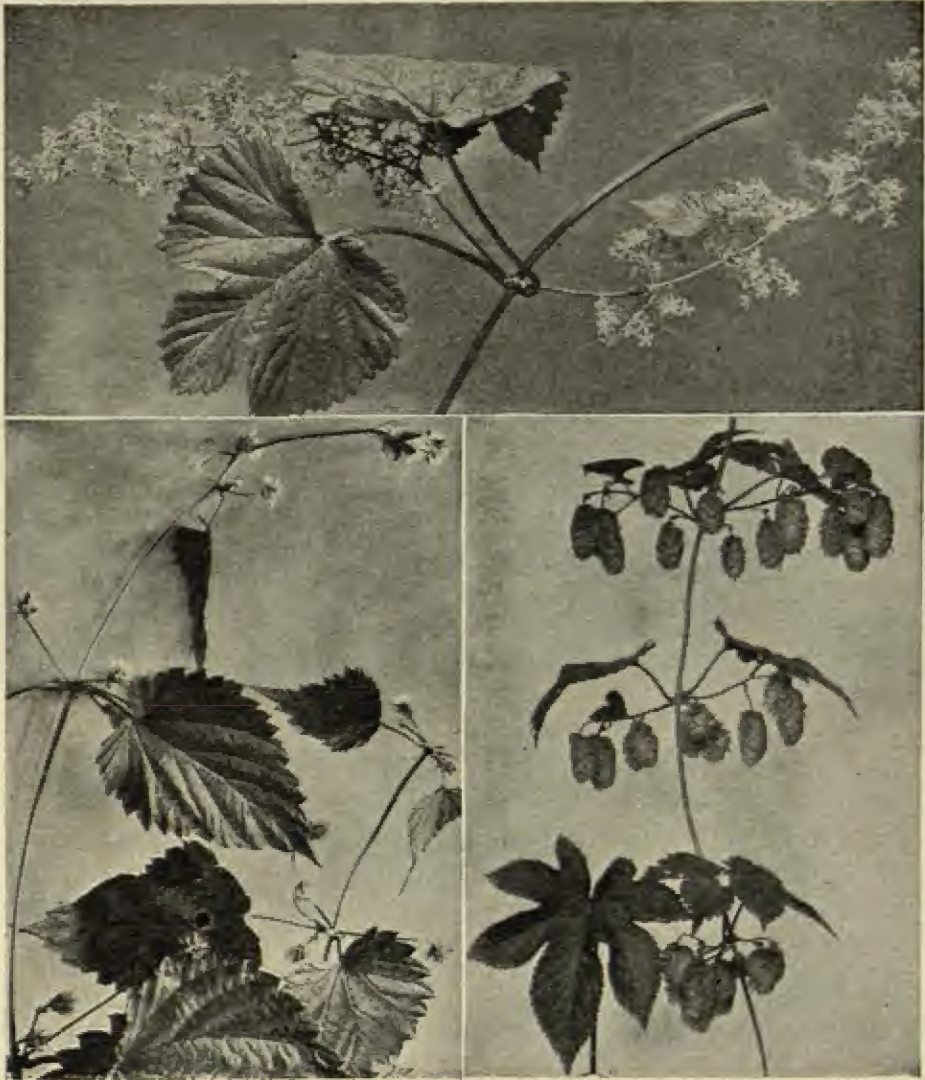
Wild clematis (*C. vitalba*, from the Latin *vitis*, vine, and *albus*, white) blooms during July to September. When it flowers, it is known in some localities as white vine. The large compound leaves are borne in pairs. The leaf-stalk is long and thin though very tough, and it bends round any support close at hand. There are one or two pairs of stalked lateral leaflets and a terminal one (p. 579). Each leaflet is broad at the base but tapers to a long point. Sometimes it is slightly lobed.

The rather small, greenish-white flower has no petals, but there are four, sometimes six, oval sepals. There are many free stamens and many free carpels which develop into fruits in the form of plumed achenes (p. 35).

At this time of year, especially in the south, hops may be seen festooning the hedges with their long, scrambling stems and looking particularly handsome during July to September when they are bearing their bright-green floral catkins (*Plate 16*).

So closely related is the hop to the stinging nettle that in some Floras it is included in the same family (URTICACEAE, Dicot.). But other authorities consider it sufficiently different to warrant another family, namely, CANNABINACEAE, Dicot., to which also has been transferred the hemp plant from the URTICACEAE.

The hop belongs to the bi-specific genus *Humulus*, a genus confined to the north-temperate zone, at any rate in the wild state. The European species is *H. lupulus* and the American genus *H. americanus*. Both species are also cultivated either for their ornamental value or mainly for the



Harold Bastin

HOP

Top, male inflorescences; bottom left, female inflorescences; bottom right, ripening fruit

production of the fruiting catkins which are used for flavouring beer. The generic name is the Latinised version of the Old German *humela*, meaning hop. The specific name is intriguing: it is Latin for wolf or hook; Pliny refers to *H. lupulus* as the "wolf of the willows".

The long stem of the hop is extremely rough; so also are the leaves. This characteristic enables the plant to scramble over hedges. The leaves

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are borne in opposite pairs. The lower ones are divided into three, five or seven lobes; the upper ones are not so divided but are shaped like an elongated heart. All are deeply serrated.

The plant bears unisexual flowers, though both sexes appear on the same plant. The male flowers are borne in loose branched spikes, and the female flowers in loose catkins, or rather pseudo-catkins. The small, greenish-yellow male flower has five united sepals, petals, and five stamens. The greenish-yellow female flower bears a calyx made up of one enlarged bract which encloses a single ovary bearing two long styles. The flowers are wind-pollinated. The fruits are described on p. 577.

OTHER FLOWERS WHICH MAY APPEAR IN THE CANOPY OF HEDGES DURING JULY

(The number following each flower is the page on which it is mentioned or described)

Bindweed, Great, 306

Briar, Sweet, 304

Bryony, White, 220

Honeysuckle, 309

Nightshade, Woody, 306

Rose, Wild, 303

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UNDERGROWTH OF HEDGES

THE July hedgerows are still carrying many of the flowers whose first representatives appeared during May or June; but a number of fresh arrivals will be found during this month, though none is particularly interesting or outstanding.

One of the most common is the hedge or large bedstraw (*Galium mollugo*, from the Latin *mollis*, pliant). In many respects this plant is similar to lady's bedstraw (p. 334) and goosegrass (p. 314); indeed it belongs to the same genus as do these two within the family RUBIACEAE, Dicot. Hedge bedstraw trails along the upper parts of the hedgebank. The main points of difference between it and lady's bedstraw and goosegrass are in size and colour. It is a perennial growing three to five feet along the ground and among the undergrowth, and it is therefore larger than lady's bedstraw. The leaves also are larger, and there are six to eight in each whorl. The flowers which appear during July to September are white and are borne in less dense and somewhat smaller inflorescences. Compared with the goosegrass, on the other hand, the leaves are smaller and the plant is entirely smooth. The fruit also, though fundamentally like that of goosegrass, bears no hooks; in fact it is quite smooth.



Ernest G. Neal



Harold Bastin

COW PARSNIP OR HOGWEED

Top right, regular inner flower ; bottom right, irregular flower of outer rim

Among the many umbellifers (UMBELLIFERAE, Dicot., p. 165) now in bloom, the cow parsnip or hogweed is beginning to display its very large white floral umbels. This plant favours damp and dense hedgerows and other damp and shaded sites such as the edges of woods. It is the only common wild member of the genus *Heracleum* (*H. sphondylium*), a genus named after Hercules or Heracles who is supposed to have discovered medicinal virtues in it. Cow parsnip is a large, robust biennial growing four to five feet high or even more. It grows very tall when surrounded by other tall plants.

The stem is deeply furrowed longitudinally and the leaves are cut into irregularly shaped, markedly toothed pinnae. The white compound umbels, which present themselves during July and August, are composed of unusually large flowers. Those of the outer rim of each umbel are irregular in that the petals facing outwards are much larger than those facing inwards.

It is of interest to note that a cultivated species of this genus, *H. giganteum*, if growing in damp shady places, will attain a height of nine or more feet, and bear enormous leaves and umbels as big as umbrellas. It is frequently grown near ornamental lakes.



Ernest G. Neal

COMMON BURDOCK

Among the composites (COMPOSITAE, Dicot., p. 126) of the July hedgerows, the curious robust, yet not very conspicuous, burdocks are new arrivals. These plants are the only British representatives of the small genus *Arctium*. Both this and the common name refer to the rough, bristly fruits (see p. 431). *Arctium* is probably from the Greek *arktos*, bear, which also is rough and shaggy; the common name, burdock, is of mixed derivation—*burre*, Middle English meaning something shaggy, and *doce*, Anglo-Saxon for plant.

There are two burdocks—the great or common (*A. lappa*, from the Latin meaning bur) and the small (*A. minus*). Both grow in hedgerows, woodlands and in waste places. The great burdock grows three to four feet high; but the small burdock seldom grows higher than three feet, often less. Both are bien-

nials and both bloom during July and August. The plants are very bushy. Their roots are enormous, being several inches in diameter and more than a foot deep. The stems are grooved and much branched. In many temperate countries, including North America, both species frequently prove themselves to be agricultural pests.

Farmer, that thy wife may thrive,
Let not bur and burdock wive.

Lorna Doone: BLACKMORE

The leaves are wavy and rather rough looking. They are shaped like elongated hearts with irregular margins. Those of the great burdock are very large, and the leaves of this species which emerge from ground-level have blunted tips. The cauline leaves, and all leaves of the small species, are pointed.

The composite flower-heads are not very conspicuous when blooming. They are compact, those of the great burdock being fairly large (three-quarters of an inch in diameter) and bearing pinkish-purple flowers, and

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those of the small species being much smaller and bearing flowers of a deeper purple shade. Though both species are at their heyday during July and August, the great burdock often blooms much earlier in the year. All flowers of the flower-head are tubular. Each head is surrounded by a tight involucre of spiny bracts which, after fertilisation, become brown, tough hooks. Then the entire head becomes easily detachable and forms a bur which clings to the legs or coat of any browsing animal. In this way the fruits are dispersed. Children like to throw these ripe burs at each other for they are so tenacious that they will cling immediately to anything rough. Woe betide the girl who gets one in her hair; and what a curse they can be if they get entangled in a dog's shaggy coat!

Another member of the COMPOSITAE, Dicot., which favours hedgerows (though it prefers very damp ones and other wet habitats) is the feverfew (*Chrysanthemum parthenium*). This plant presents its white flower-heads during July to September. The common name of this plant is from the Anglo-Saxon *feferfuge*, derived from the Latin *febrifugia*, putting fever to flight. The plant belongs to the same genus as the moon-daisy (p. 325)



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and others. In some Floras it is placed in the genus *Matricaria* (p. 365), and in others in *Pyrethrum*. The specific name is from the Greek *partheneia*, maidenhood, which might suggest that the plant has been used for the treatment of certain diseases in young women or it might simply allude to the white flower-heads.

Feverfew is a perennial growing one to three feet high. The entire plant has an unpleasant smell which is very offensive to bees. The leaves are pinnate and each pinna is deeply cut into oval segments.

The much-branched stems hold up many heads of flowers each little more than half an inch in diameter. Each head contains both tubular and ligulate flowers (p. 132). The tubular flowers are packed to form the yellow disk; the ligulate flowers form a white single ray, though sometimes these ray flowers are entirely absent.

The mint family (LABIATAE, Dicot., p. 158) is a very large and important family whose members have already presented themselves in a variety of habitats during different seasons of the year. It also presents its quota to the July flora and several of this month's members are now beginning to bloom in hedgerows.

Catmint, a perennial growing two to three feet high, presents its white flowers from July until September. It is not a common plant, however. It belongs to the same genus (*Nepeta*) as the ground-ivy (p. 158). Catmint (*N. cataria*) is so named because cats love to roll and lie in it as they do also in valerian. Cultivated varieties of catmint have pale-mauve or blue flowers, and they also have a fascination for this animal, which is a nuisance in gardens anyhow.

The wild catmint grows on the more open banks of hedges. It is very typical of the family, having heart-shaped, serrated leaves, and white flowers borne in axillary whorls with a large number of such whorls forming a terminal spike.

Calamint also grows on hedge-banks, though it favours very dry situations. This plant also belongs to the mint family.



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CALAMINT

Some Floras include it in the genus *Calamintha*: others name it *Satureia*. *Calamintha* is from the Greek *kalos*, beautiful, and *minthe*, mint. Calamint (*C. officinalis*) is a perennial growing one to two feet high. It is not very common. It is small and bushy and the pale-purple flowers are borne in small, loose whorls which appear during July to September. The entire plant is typical of the family.

Wild basil or hedge calamint (*C. vulgaris*) favours not only hedge-banks but also cornfields, especially those on calcareous soils. It also is a perennial, growing one to two feet high and presenting whorls of purple flowers during July to September. But wild basil is a much more robust plant than calamint and its leaves are twice as large. The flowers, too, are larger and they are grouped in denser whorls.



Harold Bastin

WILD BASIL

The genus *Stachys*, also of the mint family (LABIATAE, Dicot.), is fairly cosmopolitan with the exception of Australia and New Zealand. It is represented in Britain by several wild and cultivated species. One, the hedge woundwort (*S. sylvatica*), is now blooming in hedgerows, woods and along shady roadsides and will do so until the end of August. It is a very common, though not very attractive plant. It is perennial and grows one to three feet high. The entire plant is hairy and emits an unpleasant odour.

The heart-shaped leaves are serrated and very pointed. They are borne in pairs on long stalks. The reddish-purple flowers form whorls which are characteristic of the family, and these whorls are arranged in a terminal spike, sometimes reaching a length of eight inches. This is reflected in the generic name, which is from the Greek *stachys*, spike. There are about six flowers in each whorl. Each flower is reddish-purple with a tinge of white on its lower lip. The upper lip is arched and the lower lip is three-lobed, the two lateral lobes being reflexed.

We have already met the most characteristic members of the family CONVULVULACEAE, Dicot. (p. 306) in the two genera *Calystegia* (p. 306) and *Convolvulus* (p. 361); but there is another genus indigenous to Britain, namely, *Cuscuta*, a large genus of tropical and temperate total parasites. In Britain the genus is represented by the dodders. There are three of them — the greater, the lesser or heath and the flax. The

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greater dodder is parasitic on stinging nettles and certain vetches; the lesser or heath dodder attacks gorse, thyme and ling (p. 478) and the host of the flax dodder is flax (p. 452). The last-named is rare.

Now is the time to look for greater dodder (*C. europaea*) in hedgerows and in any other places where stinging nettles and vetches grow; but it is not very common. This sickly looking parasite is an annual which develops a yellowish, thread-like stem which twines around the stalks of its host, climbing sometimes to the very top. Some authorities claim that the generic name signifies this as being derived from the Greek *kassuo*, to stitch together; but there is some doubt about this and it is possible that the name is derived from the Arabic *kustikūt*.

At intervals, the stem of the parasite gives off suckers or haustoria which penetrate the stem of the host and by this means tap the host for food supplies. This being so, and since the parasite is content to absorb *all* its food supplies from the host, green leaves are not necessary, so they are reduced to small, almost colourless scales. The parasite has no root. When it germinates, it is true that it gives off a root, but this is solely for the purpose of anchorage. Once established, a shoot is given off which grows around the stem of the host, pierces it with haustoria and then begins to nourish itself. Then the primitive root dies away. If the seed of the parasite settles away from a suitable host, then the young potential parasite perishes, for it cannot fend for itself (see p. 545 for illustration of lesser species).

During July and August, small rosettes of pink flowers appear. Each flower is fairly typical of the family (p. 306), though the corolla tube, being cleft into four, is more salver- than funnel-shaped. The calyx tube is also four-cleft.

OTHER FLOWERS WHICH MAY APPEAR IN THE UNDER- GROWTH OF HEDGES DURING JULY

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Avens, Wood, 287	Gladdon, 212
Buttercup, Common, 323	Goat's beard, 316
Chervil, Rough, 317	Goosegrass, 314
Crane's bill, Dove's-foot, 177	Hemlock, 291
Crane's bill, Stinking, 225	Herb Robert, 225
Daisy, 127	Horehound, Black, 354
Dandelion, 129	Iris, Stinking, 212
Deadnettle, White, 222	Mallow, Common, 348
Dock, Broad-leaved, 463	Mustard, Hedge, 314
Dock, Red-veined, 464	Nettle, Common stinging, 312
Dock, Sharp, 464	Nettle, Roman, 313
Figwort, Knotted, 417	Nettle, Small stinging, 313
Foxglove, 284	Ox-tongue, Bristly, 316



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Parsley, Fool's, 461
Plantain, Hoary, 337
Plantain, Lamb's tongue, 336
St. John's wort, Perforated, 418
Stitchwort, Greater, 157

Strawberry, Wild, 227
Strawberry, Wood, 227
Vetch, Bush, 225
Vetch, Tufted, 314
Violet, Dog, 154

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FIELDS, MEADOWS AND PASTURES

SHRUBS

A CLOSE relative of the blackberry (*Rubus fruticosus*, ROSACEAE, Dicot., p. 424) may be seen in bloom during July around the edges of fields, on banks and in other fairly damp situations. This is the common dewberry (*R. caesius*) which will continue to bloom until well in September, possibly even later. This shrub tends to scramble over the ground rather than over hedges, though it is well equipped with hooks. The flowers are always white, never pink as some varieties of bramble are. But the main difference between the two species lies in the fruits. In the dewberry these are composed of a smaller number of larger spherical drupes (p. 34). These drupes are covered with a bloom like the fruits of black grapes. This is indicated in the specific name, which is Latin for blue-grey.



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DYER'S GREEN WEED

In coarse pastures on poor soil, the small, shrubby dyer's green weed may be found. This shrub is a member of the pea family (LEGUMINOSAE, Dicot., p. 95) and it is a close relative of the petty green weed or petty

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whin which opened up much earlier on heaths (p. 252); in fact, both plants are members of the same genus — *Genista*.

Dyer's green weed (*G. tinctoria*) is a shrub of about the same size as petty whin; that is, it grows about one to two feet high. But the flowers of dyer's green weed, though very similar in form and colour (yellow) to those of petty whin, are considerably larger. They appear from July to September. But the two plants cannot be confused, for whereas the leaves of petty whin are small, needle-shaped spines, those of dyer's green weed are normal, being fairly large and lance-shaped. The flowers are borne in terminal inflorescences, each flower being subtended by a bract.

As both common and specific names (the latter from the Latin *tingo*, to dye) imply, this plant yields a dye. This is obtained from the flower and is at first yellow, but it is then mixed with woad (*Isatis tinctoria*, p. 467) and the formerly well-known dye Kendall Green is produced. In fact, dyer's green weed is known in some localities as woad-waxen. But the preparation of this dye cannot compete with modern synthetics, so it is now becoming a thing of the past.

HERBS

One of the most charming of our July flowers is the little bird's-foot trefoil which frequently changes a green meadow into a patchwork of green and yellow, or more often covers an entire meadow though nestling beneath the taller grasses and other plants, changing the entire scene from one of grass-green to one of greenish-yellow (*Plate 17*).

Yellow with birdfoot-trefoil are the grass-glades;
Yellow with cinquefoil of the dew-grey leaf;
Yellow with stonecrop; the moss-mounds are yellow;
Blue-necked the wheat sways, yellowing to the sheaf.

Love in the Valley: GEORGE MEREDITH

This neat little plant displays its heads of golden yellow flowers during July to September. They are very attractive, so it should be no cause for wonder that children like to gather the flowers and have given them many nicknames such as Tom Thumb, fingers and thumbs, shoes and stockings, and so forth. This plant is also the 'tufted crow-toe' of Milton's *Lycidas* and the 'bird's-foot lotus' in Jefferies' *The Open Air*.

Bird's-foot trefoil is a member of the pea family (LEGUMINOSAE, Dicot., p. 95), as is evident from the structure of the flower. It is included in the genus *Lotus*, a name derived from the Greek *lotos*, trefoil, though the name was originally Egyptian. This has no connexion with the lotus of the water-lily family (p. 517); that lovely flower of Asia, Australia and America (sacred in some parts), belongs to the genus *Nelumbium*. Neither must the leguminous *Lotus* be associated with the lotus-eaters of Homer's *Odyssey*, for the lotus they ate was the fruit of a tree.

Bird's-foot trefoil (*L. corniculatus*, from the Latin *corniculum*, a little horn) is a perennial growing four to eighteen inches high. As the name implies, the small leaves are trifoliate. Each is borne on a fairly long stalk at the base of which is a pair of foliar stipules very like the leaflets themselves.

The golden yellow flowers, tinted with red, are borne in heads at the ends of very long, slender stalks — three to ten flowers to a head. The flower is structurally typical of the papilionaceous members of the family (p. 95). The uppermost of the ten stamens is free. The two petals forming the keel are united above and below, but a small opening is left at the apex. The pollen is shed while the flower is still in bud. Then as the flower opens, the filaments of five of the stamens swell and thus force the pollen grains out of the apical opening of the keel and on to the stigma. Thus self-pollination is effected, though cross-pollination might take place. The long fruit pods give the effect of a bird's foot, hence the common name.

There are other less-common species of *Lotus*. For example, the narrow-leaved bird's-foot trefoil (*L. tenuis*) has long, thread-like stems as indicated by the specific name, which is Latin for thin or delicate. This is a taller perennial growing one to two feet high, but blooming at the same time as



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the commoner species. Its leaflets are slender, its flowers are smaller and there are not so many per head. This species prefers wetter pastures. Other species of *Lotus* are even rarer. The greater or marsh bird's-foot trefoil (*L. uliginosus*) grows in swamps and marshes (p. 494).

Two other trefoils appear in certain pastures and open fields; but they are not members of the same genus as bird's-foot trefoil, though they are members of the family LEGUMINOSAE. They are strawberry trefoil and hare's-foot trefoil. Both belong to the clover genus — *Trifolium* (p. 233).

Strawberry trefoil (*T. fragiferum*, from the Latin *fraga*, strawberries), sometimes also known as strawberry clover or strawberry-headed trefoil, grows in pastures situated on stiff soil. It might even be discovered growing in ditches. It is a perennial growing six to twelve inches high and presenting its compact, spherical heads of reddish-purple flowers during June to September. After fertilisation, the calyces of the flowers swell and become red so that the entire head enlarges to about an inch in diameter, and then it looks something like a strawberry.

Hare's-foot trefoil (*T. arvense*) grows in more sandy places and dry pastures. It is a small annual never growing much more than nine inches high and frequently much less and displaying its flowers during July to September. The outstanding characteristic is the long, cylindrical form of flower-head. This is made up of many small, pink flowers and attains a length of from a half to one inch. The entire plant is covered with soft white down.



Harold Bastin

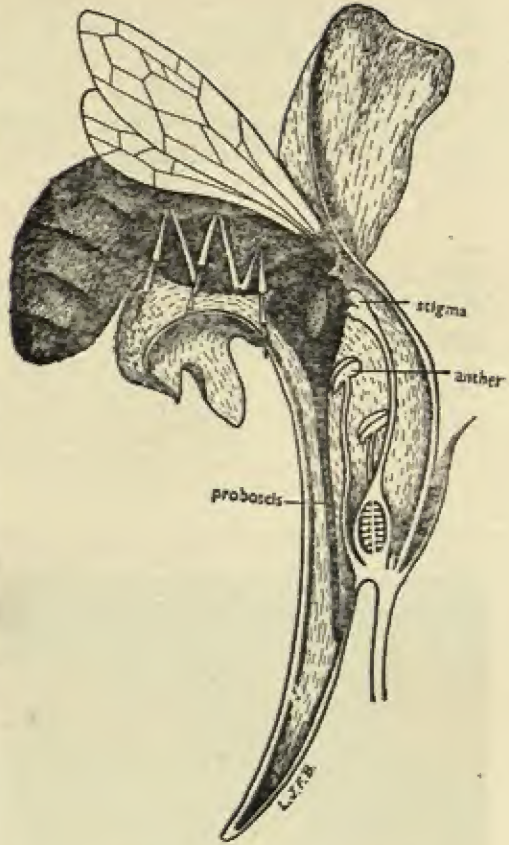
STRAWBERRY TREFOIL OR CLOVER

A common and very characteristic member of the snapdragon family (SCROPHULARIACEAE, Dicot., p. 226) begins its long flowering season this month. It is the yellow toadflax, and it presents its dense inflorescences of lemon-yellow flowers tinged with orange from July until well into October, sometimes even later. Florally, this plant is similar to the ivy-leaved toadflax (*Linaria cymbalaria*, p. 260), so it comes into the same genus (*L. vulgaris*) (Plate 17).

Yellow toadflax is superficially similar to the cultivated

snapdragon though sufficiently different as to warrant not being grouped in the same genus (p. 476). It is a tall, stiff perennial which sometimes attains a height of three feet, though it usually grows about eighteen inches. Though the plant does produce seeds, it can also reproduce itself vegetatively by means of adventitious buds which develop at the tops of the roots.

The stiff, erect stem is crowded near its base with long, thin, almost grass-like leaves. Further



POLLINATION OF TOADFLAX



YELLOW TOADFLAX

Bottom left, section of flower; bottom right, fruit

up the stem these are spaced out in alternating design.

The large yellow flowers are also crowded into a long, terminal raceme, with the oldest flowers at the bottom. The petals form a tube typical of some members of the family, with a pronounced, backwardly extending spur which contains nectar. As in the snapdragon, the two lips of the corolla are pressed tightly together so that only strong, long-tongued insects such as bees can prise them apart in order to get at the

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nectar. An orange spot on the corolla acts as a honey-guide in this connexion. Cross-pollination is ensured since the stigma of the flower meets the head of the visiting insect before the stamens of the same flower do, as seen in the illustration on p. 439.

On rare occasions a variety of toadflax may be found which has a regular corolla of five equal petals with five equal spurs.

The very word 'thistle' is anathema to the farmer, and to mention such a plant to him is like a red rag to a bull; yet it must be admitted that of all the different thistles, the very common and characteristic spear or spear plume thistle is a handsome plant, especially during July and August — its flowering season.

Rank weeds, that every art and care defy,
Reign o'er the land, and rob the blighted rye;
There thistles stretch their prickly arms afar,
And to the ragged infant threaten war.

The Village: G. CRABBE.

The spear plume thistle crops up in many places. It thrives in fields



Ernest G. Neal

SPEAR THISTLE

where the grass is short, on grassy slopes, on waste ground, along roadsides and, alas, on cultivated ground. Like all other thistles, it belongs to the family COMPOSITAE, Dicot. (p. 126). It is included in the genus *Cirsium*, from the Greek *kirsion*, thistle. Spear plume thistle (*C. lanceolatum*) is a robust biennial growing two to five feet high (the tallest of the thistles), and displaying its handsome heads of purple flowers during July and August.

The lanceolate leaves might be anything from six inches to a foot long. They bear two-cleft lobes and their margins produce very prominent and forbidding spines. Flanges of the leaves pass down the stem in opposite ridges which also bear strong, aggressive spines.

Thistles, most, jump from the marl
Bearing teeth in sudden snarl.

Waste Ground: EDMUND BLUNDEN

JULY

The leaves are somewhat downy beneath.

The flower-head is characteristic of thistles. It is enclosed in a tight involucre of green spiny bracts. All the purple flowers are tubular. The fruit bears a pappus of very long, feathery hairs which, while still in the flower-head, give the entire collection the appearance of a shaving brush.

The thistle now is older
His stalk begins to moulder,
His head is white as snow.

Song: R. W. DIXON

When released, each fruit is enshrouded in a delicate sphere of white hairs, by which means it floats sometimes for miles over the countryside and into towns, in fact, almost anywhere, which leaves us in no doubt of the efficacy of this means of wind dispersal.

. . . the seeded thistle, when a parle
It holds with Zephyr, ere it sendeth fair
Its light balloons into the summer air.

Spenserian Stanzas: KEATS

Several other members of the family COMPOSITAE, Dicot., begin blooming during July, but none is more attractive than the common yarrow or milfoil which bedecks our pastures and other sites, especially waste ground and roadsides, with its massed heads of pale-pink, mauve or white flowers mainly during July and August, though this tenacious plant sometimes goes on flowering right up to November. It is not at all characteristic of the family; in fact, a superficial glance at it might suggest that it is an umbellifer.

Yarrow is included in the genus *Achillea* (*A. millefolium*), a very large genus of north temperate plants, represented in Britain, however, by only two species, the yarrow (*A. millefolium*) and the sneezewort (*A. ptarmica*)—the latter being an inhabitant of damper sites, having larger flowers and simple, lance-shaped, finely toothed leaves. The generic name is after Achilles, pupil or son of the centaur Chiron, who is said to have discovered medicinal virtues in these plants, especially for staunching wounds. In some areas, yarrow is known as nosebleed (*Plate 17*).

The Yarrow, wherewithal he stops the wound-made gore

Poly-Olbion: DRAYTON

The specific name of yarrow, *millefolium*, is from the Latin *mille*, thousand, and *folium*, leaf; for the lower part of the plant is certainly lost in tufts of leaves and each of them is so finely divided as to give the appearance of thousands of them. The common name yarrow is from the Anglo-Saxon *gearwe*: the alternative name milfoil is, of course, a contraction of the specific name.

The millefoil, thousand-leav'd, as heretofore,
Displays a little world of flow'rets grey.

Spirits and Men: EDNEZER ELLIOTT



Ernest G. Neal

YARROW

The whole plant has a strong smell, slightly aromatic.

Yarrow is sometimes troublesome as a weed, for its stem is very tough and there are also tough, underground stems which are difficult to eradicate. If by chance it appears on lawns it proves to be very resolute and obstinate; the entire underground system should be rooted out.

The plant is a perennial, growing six inches to two feet high.

Though the flower-heads superficially appear to be umbelliferous, closer examination of the massed 'umbel' will reveal that what appears to be a single flower, is actually a composite capitulum (p. 131) of a collection of flowers. There is a disk composed of a few yellowish tubular flowers each quite typical of the

family, and this is surrounded by a ring of about five white, pink or mauve ligulate flowers, each of which bears a broad three-lobed corolla strap. The entire capitulum is surrounded by a simple involucre of small, chaffy bracts. The fruit has no pappus.

Of the other members of the family COMPOSITAE, Dicot., which begin blooming in fields and pastures during July and goes on through August, the blue fleabane is also common. It is less inspiring than the yarrow, but more typical of the family. This plant prefers dry sites, especially chalk downs and sometimes even walls. It is a biennial (sometimes annual) growing nine to eighteen inches high. It belongs to the genus *Erigeron* (*E. acris*), a large, north temperate genus, more widely spread and having more species in North America than in Britain. In fact, there is only one other indigenous British species, *E. alpinus*, the very rare alpine fleabane, though a third, *E. canadensis*, the Canadian fleabane (p. 472), is now naturalised in Britain. When in fruit, the head of these species is a mass of down; this is implied in the generic name which is derived from the Greek *eri*, early, and *geron*, old.

The entire blue fleabane plant is hairy; its branching stems are thin and tough; the narrow leaves simple, small and lance-shaped with

smooth margins. The flower-head is not blue but purple. There are both tubular and ligulate flowers. The tubular flowers form a small yellow disk. The purple ligulate flowers stand erect, not spreading as in most composites (*Plate 17*).

Then there is the ploughman's spikenard, also of the family COMPOSITAE, Dicot., which displays its dingy yellow flower-heads on calcareous pastures and sometimes in copses during July to September. This large biennial attains a height of anything from two to five feet. It is included in the genus *Inula* (*I. conyza*), a large genus native to Europe, Asia and Africa. There are five British species, but *I. conyza* is the only common one. The generic name is probably a corruption of *helenium*, which is a derivative of *helene*, basket, referring to the shape of the involucre of bracts (see below). The specific name is Greek for fleabane, for the plant is poisonous to certain insects (*bana*, Greek for poison), as are the true fleabanes. The common name is interesting. The true cosmetic spikenard of the Scriptures was extracted from the underground stems of *Nardostachys jatamansi* of the family VALERIANACEAE, Dicot. (p. 290). This, when imported into Britain, was too expensive for poorer people, so they used the fragrant roots of *Inula conyza* — mainly for medicinal purposes.

Ploughman's spikenard's leaves are lance-shaped with finely but irregularly toothed margins. Those growing at ground-level are large and form a tight rosette, thus making the plant a nuisance when growing on greens and lawns. The flower-heads are borne in dense flat panicles. In each head there are a few yellowish tubular flowers surrounded by about half a dozen dull-yellow ray flowers. Enclosing the whole is an involucre of leafy bracts each of which is recurved.

Autumnal hawkbit, also of the COMPOSITAE, Dicot., blooms in pastures, etc., during July to October. This is a close relative of the rough hawkbit (*Leontodon hispidus*, p. 327). Autumnal



Ernest G. Noel

PLOUGHMAN'S SPIKENARD

hawkbit (*L. autumnalis*) is a perennial of more varying habit which grows three inches to two feet high. There is a rosette of very deeply lobed leaves (much more deeply lobed than those of rough hawkbit); but there are only a few very small, grass-like leaves growing on the upright stems. The yellow flower-heads, composed of all ligulate flowers, are slightly smaller than those of the rough species, and the involucre of bracts is smooth, not hairy.

Finally, there is the mouse-ear hawkweed, another member of the COMPOSITAE, Dicot., which belongs to the genus *Hieracium*, a very large genus of plants mainly of South African origin but represented in Britain by eight species. The generic name is derived from the Greek *hierax*, hawk, for according to Pliny hawks ate these plants to improve their eyesight. It is more likely, however, that the name is derived from the fact that many species grow in precipitous places inhabited by hawks.

Mouse-ear hawkweed (*H. pilosella*, from the Latin *pilus*, hair) is a very hairy perennial which favours dry pastures and open banks. Its hairy leaves are long and lance-shaped, and they are all radical, forming a rosette. The large heads of pale-yellow flowers, all ligulate, are borne on hairy stalks, two to twelve inches high. They appear during July and August.

Among other hawkweeds is the wall hawkweed (*H. murorum*), having lance-shaped though slightly toothed rosette leaves and variable cauline ones. Its floral stalks are branched. Then there is the umbellate hawkweed (*H. umbellatum*) of heathy places which bears a large number of flower-heads on one stalk. This species has lance-shaped, regularly toothed cauline leaves, but no radical ones.

Less significant members of other families are now making their appearance in our meadows and pastures. For example, in the case of the family DIPSACACEAE, Dicot., a close relative of the family COMPOSITAE, the most significant member is the field scabious which began blooming in fields, etc., during June (p. 328). Now, two other members of this unusual family, and indeed of the same genus (*Scabiosa*), appear on the scene.

The small scabious (*S. columbaria*) grows on calcareous downs and in dry pastures and displays its lilac flower-heads during July and August. This species, also perennial, is smaller than the field scabious, for it grows only one to two feet high. All its leaves are divided, though the radical leaves are less indented than those farther up the stem. They are supposed to look like pigeon's feet, as is indicated by the specific name which is derived from the Latin *columba*, pigeon. The flower-head, too, is smaller; but the outstanding difference between the small and the field scabious (and indeed the other species, the devil's-bit) is that the corolla tube of the small species is five-toothed as against the four lobes of the other two species.

Devil's-bit or premorse scabious (*S. succisa*) also grows in fields and on heaths. It is a perennial intermediate in size between the field and the small, growing one to three feet high. Its root is solid and abrupt, that is premorse or lopped off, as indicated by both specific and alternative common names. The other main characteristic is the leaves which are lance-shaped but with entirely smooth margins; they are not lobed or serrated. The flowers, too, are of a bluer shade than those of the other two species, though they are four-lobed like those of the field scabious. This species is very common.

The musk mallow, a not very common species of *Malva* (*M. moschata*, MALVACEAE, Dicot., p. 348), begins blooming in very dry meadows and on gravelly sites during July and continues in flower well into September. There is no mistaking this plant for the flowers are very like those of common mallow (p. 348), though they are more rose-coloured. The plant is about as large, but its leaves are more finely divided into five or seven lobes each of which is still further divided. The rose-coloured flowers are crowded towards the top of the stem. The leaves emit a faint musky odour. Sometimes a white variety of this species is cultivated.

The small burnet saxifrage (*Pimpinella saxifraga*), of the family UMBELLIFERAE, Dicot. (p. 165), blooms in dry pastures, especially those on calcareous soils, during July to September. This species is about half the size of the large burnet saxifrage (p. 420), but it is much more common. The radical leaves are pinnate, like those of the large burnet saxifrage; the upper leaves are also pinnate, but each pinna is deeply cut into long segments.

One of the most common labiates (LABIATAE, Dicot., p. 158) is self-heal, and this grows in all sorts of grassy places, mainly pastures and wasteground. Though the plant is fundamentally characteristic of the family, there should be no confusing it with other labiates, for its purplish-blue flowers are borne in whorls of about six flowers each, but all the whorls are crowded into a cylindrical terminal head about one to two inches long. At the base of the head is one pair of leaves and within the head itself are pairs of small, tapering green bracts, each pair subtending one of the crowded whorls.

Self-heal is the only common British member of the genus *Prunella*, a small European genus whose name is a corruption of *Brunella*, from the German, *Brunelle*, a cure for quinsy. The common name of the plant dates back to the days when it was looked upon as a cure for practically every ailment. Apart from self-heal itself (*P. vulgaris*) there is only one other British species, *P. laciniata*, and that is very rare indeed. Though at times the common blue self-heal might throw up a white variety, the rare



SELF-HEAL

Harold Bastin

species is usually creamy white, yet, on the other hand, it sometimes presents a blue variety.

Self-heal is a perennial which grows four to twelve inches high and displays its dense purplish-blue flowers during July to September. Vegetatively the plant is typical of the family, the stalked leaves being borne in pairs, though they are more lance-shaped than usual. The upper lip of the corolla is erect; the lower lip spreads into three lobes.

Among the rarer dicotyledonous plants of fields and pastures is the round-headed rampion which is usually confined to the chalk downs of south-east England. It belongs to the bell-flower family (CAMPANULACEAE, Dicot., p. 416) and is one of two British species belonging to the fairly small European and Asiatic genus *Phyteuma*. Round-headed rampion is *P. orbiculare* and its small flowers are crowded into a globular head. The other species is spiked rampion (*P. spicatum*) whose heads of flowers take the form of dense spikes. The latter species is even rarer than the former, and it grows in woods. The generic name means nothing more than to plant, coming from the Greek *phyteuo*. The specific names explain themselves.

Round-headed rampion is a perennial which grows four to fifteen inches high and blooms during July and August. The large leaves are

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simple but are borne on long stalks. All are lance-shaped with slightly serrated margins, but the blades of the radical leaves are slightly broader at their bases (*Plate 17*).

The deep-blue flowers, massed into globular heads, resemble those of sheep's-bit scabious (p. 416) — another member of this family. The method of ensuring cross-pollination is interesting. The long, thin petals form a tube by slight coherence at their tips when the flower is young. At this stage the stamens are ripe, but not the style or stigmas. Then the pollen is shed into the corolla tube and this is followed by further growth in length of the style which pushes the petals apart and at the same time forces the pollen outside ready to meet an insect visitor. Then the petals separate completely and open out, and the style lengthens still further and the three stigmas ripen. In this position the stigmas meet an oncoming insect and receive any pollen from another flower which it might be carrying.

Rock roses are favourites with gardeners, especially with those who possess rock gardens, for these plants in all their varieties of white, pale yellow, orange, amber, pink and crimson make a very brave show. Yet, showy though they are, they are not roses at all, but are members of the



Anne Jackson

THE FLORAL YEAR

small family CISTACEAE, Dicot., a family which flourishes in north temperate countries (though some members of it are indigenous to South America). All members of the family favour sunny positions preferably on chalky or sandy soils. There are only four genera within the family, and only one of these, namely, *Helianthemum*, is indigenous to Britain. To this the rock rose belongs. There are four wild species in the genus, which grow indigenously in this country, all of them rock roses; but only the common rock rose (*H. chamaecistus*) is likely to be found, and this only in sunny calcareous pastures and possibly on chalk downs, mainly in the south. The beautiful, large yellow flowers certainly love the sun, for they close during inclement weather; this is indicated in the generic name which is derived from the Greek *helios*, sun, and *anthemon*, flower.

The rock rose is a small perennial which trails its branches along the ground for a length of three to ten inches. This trailing habit is reflected in the specific name which is from the Greek *chamai*, on the ground, and *kistos*, rock rose. The delicate stems bear small, simple, lance-shaped leaves in pairs. Each is borne on a very short stalk with two small, grass-like stipules at its base.



Ernest G. Neal

PYRAMIDAL ORCHIS

The flowers appear from July to September. There are five sepals, though two of them are so reduced that it appears as if the calyx is composed of three sepals and two small stipules. The five large yellow, free petals are heart-shaped. There is an indefinitely large number of stamens. The three carpels are fused to form an ovary with a long style tipped by three not very pronounced stigmas. The fruit is a capsule which eventually splits into three valves.

Two Monocotyledons announce themselves in meadows and other grassy habitats during July, and both of them are members of the orchid family (ORCHIDACEAE, Monocot., p. 209). One is the fairly common pyramidal orchis which favours those pastures covering calcareous soils. There is no mistaking this plant, for its rose-coloured small flowers are borne in a dense pyramidal spike which emits an unpleasant smell. This orchis belongs to the same

genus as the early purple orchis (p. 241) and has been ascribed the name *Orchis pyramidalis*.

The pyramidal orchis is a perennial which grows six to eighteen inches high. The plant is vegetatively similar to the early purple orchis having two very large root tubers, but its leaves are not so broad, neither are they spotted. The dense pyramid of flowers blooms during July and specimens continue to appear until the end of August. The outstanding floral character is the exceptional length and slenderness of the spur.

The other member of the family ORCHIDACEAE, MONOCOT., which appears in flower this month is lady's tresses. This plant is fairly common, occurring in dry pastures and other turfy places, blooming during July and August. It belongs to the genus *Spiranthes* (*S. spiralis* or *autumnalis*). It is a small, insignificant perennial which grows only four to eight inches high.

This species, too, has a couple of large root tubers. There are three to five spreading, oval leaves. The small white flowers are borne on a spirally twisted, long spike. This is reflected in the generic name which is from the Greek *speira*, coil, and *anthos*, flower. The flowers emit a smell of almonds.

OTHER FLOWERS WHICH MAY APPEAR IN FIELDS, MEADOWS AND PASTURES DURING JULY

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MORE WEEDS

WEEDS are now pestering both farmer and gardener. Some weeds flowered long before July, so these have already been considered; but this month brings forth a further crop of new arrivals, and some of these are very beautiful — but pests nevertheless.

When flax is cultivated for its fibres for making linen (see p. 451) it can with complete justification be looked upon as a very useful plant. Seen under cultivation thus (mainly in Northern Ireland and Eastern England) it is impressive. It is also a favourite of landscape gardeners for it and its varieties (many shades of blue, yellow, scarlet and white) make handsome additions to the herbaceous border. But then, in such circumstances, either on farm or in garden, flax is a very desirable plant for it is growing where it is wanted. But, alas, in the wild state it is a weed, for then it grows where it is not wanted, namely on cultivated ground devoted to other crops, mainly cornfields.

Flax belongs to the family LINACEAE, Dicot., a small cosmopolitan family which comprises two indigenous British genera, *Radiola* (p. 487) and *Linum*. Flax is included in the latter. Four species of the genus occur in this country. Perennial (*L. perenne*) and purging (*L. catharticum*) flax began blooming during June (p. 338). Now the other two, common flax and narrow-leaved flax, are beginning to display their exceptionally beautiful flowers.



Common flax (*L. usitatissimum*) is the only species of the four which is not really indigenous to Britain, for it originally escaped from cultivation, though maybe centuries ago. It is an annual, growing one to two feet high, from the root-stock of which usually only one tall, graceful stem emerges. But the stem branches near the top, and at the end of each branch a large blue flower appears. Inserted at intervals the whole way up the stem and arranged in alternate design are small, narrow, pointed, smooth-margined leaves (*Plate 19*).

The blue flowers appear during July to September. Each has five green, pointed, free sepals. Alternating with these are the five large, spreading, slightly notched petals, each of which is marked with narrow, almost black honey-guides. There are five stamens and five carpels, the latter united to form a five-chambered ovary surmounted by five separate, sturdy, long styles. The fruit is a capsule which when ripe splits to release the seeds.

Common flax is a plant of many parts in relation to man. When not a weed (and sometimes even then) it is very ornamental. Its fibres produce flax from which linen is produced — an industry which dates back to antiquity. In fact, its use in this connexion is mentioned several times in the Bible.

And Solomon had horses brought out of Egypt, and linen yarn: the king's merchants received the linen yarn at a price.—1 Kings x. 28

The seeds yield linseed oil and from the crushed residue, valuable oilcake used for feeding to cattle is prepared. Flax has also been recommended as a medicinal herb, especially for staunching wounds.

Go thou; I'll fetch some flax, and
whites of eggs
To apply to his bleeding face. Now
heaven help him!

King Lear, Act III, Sc. 7:
SHAKESPEARE

The less-common narrow-leaved flax (*L. angustifolium*) is confined to the dry parts of the south-east of England. It is a perennial which grows about the same height as common flax, but the root-stock gives off



COMMON FLAX

Bottom right, flower in section

THE FLORAL YEAR

more than one upright stem. The leaves are more crowded and each is very narrow, as is indicated by the specific name which is from the Latin *angustus*, narrow. The flowers appear during the same season; they are smaller and of a paler shade of blue.

Flax is sometimes, though not very often, host to a floral parasite — a species of dodder (*Cuscuta epilinum*, from the Greek *epi*, upon, and *linon*, flax) of the family CONVULVULACEAE, Dicot. (p. 306). Flax parasite is very similar to the more common great dodder (p. 434), though the flowers are yellowish-pink. These appear at the same time as the flowers of the host. But it is unlikely that flax dodder will be encountered except perhaps in fields of cultivated flax.

A more common, yet equally attractive weed of cornfields and other cultivated ground is the corn cockle which presents its large, pale purple flowers (almost two inches in diameter) during July to September. In spite of its attractive appearance, corn cockle is an objectionable weed among ripening corn and has been for centuries. Even Spenser, complaining of the poor harvest, refers to it.

Which, when I thought have
thresht in a swelling sheave,
Cockle for corne, and chaffe for
barley bare.

Shepherd's Calendar:

SPENSER

Corn cockle belongs to the pink family (CARYOPHYLLACEAE, Dicot., p. 99) and is so closely related to ragged robin and white and red champions as to be included in the same genus, *Lychnis* (p. 186).

Corn cockle (*L. githago*) is an annual which grows one to two feet high. The meaning of the specific name is obscure. According to Pliny, *git* or *gith* is Latin for a black-seeded plant, and *ago* means like to. Some authorities claim that the word cockle means to choke (a weed) but this too is doubtful.

The whole plant is very hairy. The leaves, arranged in pairs, are long, narrow and pointed with wavy but smooth margins.



Herold Bastin

CORN COCKLE

The flower, borne solitary, is similar in structure to the campions, but there are two distinctive features — the five sepals are exceptionally long and pointed, projecting well beyond the petals; and there are no scales at the throat of the corolla. The petals' lobes are neither divided nor segmented, merely once indented (*Plate 18*).

A still further conspicuously attractive weed is chicory or succory whose beautiful sky-blue flower-heads stand out on the edges of cornfields and on other cultivated ground. But it thrives only on chalky or calcareous soils. Here it is very versatile, for it occurs not only as a weed, but frequently flowers along roadsides, on banks and on waste places. It is most common in the south-east of England. The flowering season is a long one — from July to October and sometimes even later.

Chicory is a composite (COMPOSITAE, Dicot., p. 126) and is the only British representative of the small European and Asiatic genus *Cichorium* (*C. intybus*), though the cultivated endive (*C. endivia*) is another. The common name is from the Arabic *chikouryeh*, chicory: the generic name is from the Greek *kichore*, chicory: and, strange to say, the specific name of chicory, *intybus*, is Latin for endive.

Vegetatively chicory is a rather stiff, untidy plant which grows one to three feet high; it is only the beautiful blue flowers which attract attention (*Plate 18*).

Yarrow and Chicory,
That hath for hue no like.

The Idle Flowers: R. BRIDGES

The lower leaves form a rosette. They are shaped something like those of the dandelion, though the large main segments do not point backwards but are at right angles to the leaf's main axis. The upper leaves are small, lance-shaped, strongly pointed and slightly toothed.

The flower-heads are about an inch in diameter and they lie closely adpressed to the stem, for there is practically no stalk. Two flower-heads are usually borne in each leaf-axil. All the flowers are ligulate (p. 126) and are typical of the family. The five petals are joined to form a strap with five small teeth at the distal end. It is these straps of petals which give the intense blue colour. The pappus is not hairy but toothed. The flower-head is enclosed in an involucre made up of eight inner bracts joined at their bases with five outer bracts.

Chicory root is sometimes dried and roasted and then used either as a substitute for coffee or blended with it.

Black nightshade, a near relative of bittersweet or woody nightshade (*Solanum dulcamara*, SOLANACEAE, Dicot., p. 306), is a persistent weed, though it also appears in waste places where it does no harm. This plant is very widely distributed throughout most parts of the world. It also has a very extended flowering season — July to November.

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Black nightshade (*S. nigrum*), unlike the woody nightshade, is a herbaceous annual which grows six inches to two feet high. Its broad, triangular leaves have wavy and bluntly toothed margins. The flowers are borne in drooping umbels and are fundamentally similar to those of the woody nightshade, though they are slightly larger and white in colour. The fruit is a large black berry which is reputed to be poisonous, though the leaves certainly are not, for in some countries they are boiled and eaten. It is probable that even the berries are non-poisonous, for there is much evidence that they are used in preserves and pies in certain parts of America (*Plate 18*).

A not very common toadflax (*Linaria* species, p. 260, SCROPHULARIACEAE, Dicot.) appears in some cornfields blooming during July to October. This is the round-leaved toadflax or fluellen (*L. spuria*). The curious name fluellen probably means Llewellyn's flower, since Llewellyn the Great adopted such a flower in his badges, though whether it was the round-leaved toadflax is difficult to say, for the name fluellen or fluellin has been given to several different flowers.

Fluellen is a small, more or less procumbent, annual whose hairy branches grow four to eighteen inches long. The hairy leaves are not round, but oval, with wavy, slightly indented margins. The flowers are like those of ivy-leaved toadflax (p. 260); but the calyx tube is hairy and the petals are yellow with a chocolate-coloured upper lip.

Then there is the sharp-leaved fluellen or toadflax (*L. elatine*) which grows in similar habitats and blooms at the same time. It is also of similar habit and the flowers are almost exactly the same; but the leaves are very different, for in the case of *L. elatine* they are halbert-shaped, that is, pointed at their apices, and having two opposite, pointed lobes at the base of the blade — very like convolvulus leaves.

A not very common member of the same family (SCROPHULARIACEAE, Dicot.) which sometimes appears as a weed, especially in cornfields, is the lesser snapdragon, known also in some localities as weaselsnout (*Antirrhinum orontium*) — a close relative of the great snapdragon (p. 476). It is a biennial which throws out leafy shoots six to eighteen inches high bearing very long and very narrow leaves. Its stems are hairy. The small purple flowers are borne in spikes, though there are not many in each spike. These appear during July to October. Fundamentally the flower is similar to that of the great snapdragon though the sepals are particularly long.

The mint family (LABIATAE, Dicot., p. 158) contributes four new weeds to the July scene, namely, the hempnettles. All four plants are typical labiates. They are members of the genus *Galeopsis*. The generic name of hempnettles is associated with weasels, from the Greek *galee*, weasel, and

opsis, appearance, since the corolla is supposed to look like a weasel's head.

All four hempnettles are annuals. They have typically labiate leaves borne in pairs at right angles to each other — very like deadnettle (p. 222). The flowers form whorls, not confined to a terminal inflorescence, but borne in the leaf axils from the top to a considerable distance down the stem.

Common hempnettle (*G. tetrahit*) grows one to four feet high and is much the tallest and the most robust of the four. It grows not only on cultivated ground but also in woods, and blooms during July and August. Like most labiates, its stem is square in cross-section. This is indicated in the specific name which is from the Greek *tetra*, four, and *itis*, edge.

The whorls of flowers may be light purple or they may be purple variegated with yellow or they might even be almost white. An outstanding floral character is the very long calyx teeth. Both calyx and stem are very hairy.

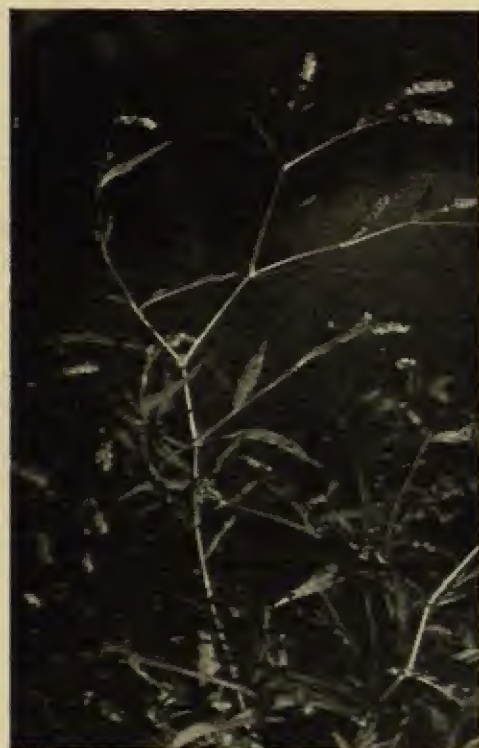
The large-flowered hempnettle (*G. speciosa*, from the Latin for beautiful or showy) is not so common. It grows on cultivated ground mainly in the north of England and Scotland. It attains a height of one to two feet, and the flowers appear during July and August. The flower is twice as large as that of the common hempnettle, its corolla being one to one and a half inches long; but the calyx tube is not so pronounced. The corolla is variegated, being usually yellow with a broad purple patch on the lower lip.

The red hempnettle (*G. ladanum*) prefers cultivated sandy soil. It is fairly common, attaining a height of ten to twelve inches and blooming from July to October. The general habit is more graceful and the leaves smaller and narrower than those of the common hempnettle. The flowers are either purple, mottled with crimson or almost plain rose coloured.

The downy hempnettle (*G. dubia*) resembles the red. It also grows on cultivated ground and blooms over the same long summer season. Its leaves however are soft and downy and its flowers yellow. But the species is very rare.

That strange family POLYGONACEAE, Dicot. (p. 236), now crops up again. In fact, during this and next month we shall meet some of the most common members of the family, certain of which are weeds. We have already met the genus *Polygonum* through the bistort of moist meadows (p. 335). Now on cultivated ground two more species appear, namely *P. convolvulus* and *P. lapathifolium*.

Climbing persicaria, climbing buckweat or black bindweed (*P. convolvulus*) is a common annual which thrives on cultivated ground. It is an obnoxious weed, for, like the small bindweed (p. 361), it twines round the corn or other cultivated plants, bearing them down by its own weight.



Ernest G. Neal

PINK PERSICARIA

That is why it is called black bindweed, though, of course, it bears no botanical relation to the true bindweeds. Yet, strange to say, its leaves are very like those of small bindweed, that is, arrow-shaped, though somewhat broader. It twines anything from one to four feet high. But the flowers are entirely different, being inconspicuous, whereas those of small bindweed are strikingly beautiful. Those of black bindweed are small and greenish-white. They bloom during July to September. They are borne on axillary spikes with four in each cluster. Fundamentally the floral structure is similar to that of bistort (p. 335).

Pink or pale-flowered persicaria (*P. lapathifolium*, from the Latin *lapathum*, sorrel, and *folium*, leaf, for its leaves are like those of sorrel, p. 237) is a common annual found growing as a weed

which grows one to three feet high on cultivated ground and also on waste ground. The leaves are oval and each ends in a long point. The small pink or white flowers are borne in dense terminal and axillary inflorescences. They appear during July to September. Each flower has five perianth segments, about eight stamens, and an ovary of three fused carpels and two styles (Plate 19).

Among the many spurges (EUPHORBIACEAE, Dicot., p. 113) the two outstanding species so far met have been the wood spurge (p. 114) and the sun spurge (p. 367). Now two others occur as weeds on cultivated ground, namely, petty spurge and dwarf spurge. Both belong to the same genus, *Euphorbia*.

Petty or purple spurge (*E. peplus*, from the Greek *peplion*, which is the name of this plant) is a small annual which grows six to twelve inches high. It is a typical spurge with broadly oval leaves and greenish-yellow flowers, the latter of which open during July to October.

Dwarf spurge (*E. exigua*, from the Latin *exiguus*, small) is certainly small, for it grows no more than four to eight inches high. It too is an

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annual weed. Its leaves are much smaller, narrow and pointed — quite lance-shaped, in fact. The greenish-yellow flowers appear during July to October.

Other plants which frequently occur as weeds also appear just as often in waysides and waste places and sometimes in other habitats. Their description has therefore been deferred until the next chapter.

OTHER WEEDS WHICH MAY APPEAR IN FLOWER DURING JULY

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Knapweed, Great, 345	Woundwort, Corn (Field), 180

WAYSIDES AND WASTE PLACES

SOME of the tallest and largest of British herbaceous plants appear in waste places and by the wayside during July. One, the rose-bay willowherb, has become known to many more people since the bombing of Britain during the Second World War, for this tall conspicuous plant was one of the first to colonise bombed sites, sometimes finding a foothold in apparently impossible places, and in certain areas producing a veritable riot of colour during July and August, sometimes earlier. There is no mistaking the plant for it is often very tall, and its pinkish-purple flowers stand out against any background. In more rural areas it may be found in a variety of habitats — rocky places, waste ground and even on the edges of woods. It has usually been one of the first to colonise freshly burnt ground and that is why it is sometimes known as fireweed (though this name is applied to several different plants, especially in the United States). It was never so well known to town-dwellers before their bombed sites proffered it their stark hospitality. Then it sometimes not only covered these but also appeared along the less-used paths, on walls and even on the roofs of buildings. All this widespread colonising is made easier by the very efficient means of seed dispersal that has developed in this plant (see p. 460).

There are altogether about ten different willowherbs, all of which, with the exception of the broad-leaved species (p. 287), are in the main July-flowering plants. They belong to the genus *Epilobium* of the family ONAGRACEAE, Dicot. (p. 287). The generic name is from the Greek *epi*, upon, and *lobos*, lobe or pod, for the floral parts are inserted at the top of a long, pod-like ovary.

Rose-bay willowherb (*E. angustifolium*) (p. 6) varies considerably in height, from one to six feet according to the conditions under which it is living. It is vegetatively very persistent and therefore difficult to eradicate, for it possesses long, tough underground stems.

The leaves are long and narrow, as is indicated by the specific name which is from the Latin *angustus*, narrow. In fact, the leaves are very like those of some willows, hence the common name, and also the much rarer alternative name, flowering willow. The margins of the leaves are somewhat crinkled. The leaves might be anything from six to eight inches long near the base where they crowd thickly around the stem, but they diminish in size passing up, though right to the top they are arranged in a close spiral design.

The flowers are borne in long, terminal, loose, pyramidal racemes. They appear during June to August. The axis of each raceme is bright



"Star" copyright

WILD FLOWERS

(mainly rose-hay willowherb) growing on a bombed site near
St. Paul's Cathedral, London

THE FLORAL YEAR

orange in colour. The largest and oldest flowers are at the bottom of the raceme, and they are sometimes already fertilised while the upper flowers are still in bud (*Plate 19*).

Each flower is borne on a purple stalk in the axil of a small, narrow bract. There are four long and narrow purple sepals and four large, spreading, pinkish-purple petals. These four petals are not arranged in cruciform fashion, for between two of them there is a larger gap through which protrude the eight long stamens and the long style capped by four stigmas. There are four carpels joined to form a very long ovary, at the top of which all the other floral organs appear to be inserted.

Rose-bay willowherb has a beautiful method of ensuring cross-pollination and an efficient method of seed dispersal, described in *Flowers in Britain* as follows:

"The nectar is secreted on the upper surface of the ovary. The long stamens project horizontally when ripe, and the style hangs downwards. After the insect has removed the exposed pollen, the stamens curve downwards and the style curves upwards ready to receive the pollen from the body of a following insect visitor. The fruit and the seeds are of particular interest, and when ripe they are an attractive sight. After fertilisation, the fruit grows into a large capsule (about three inches in length) which is four-cornered and contains many seeds. When ripe, this fruit splits



ROSE-BAY WILLOWHERB FRUIT

Left, before, and *right*, after splitting to release plumed seeds

Harold Bantin

downwards into four equal parts and thus exposes the seeds, each one of which is provided with a parachute taking the form of a tuft of long silky hairs. These are very easily blown out of the open capsule and then float through the air, sometimes for miles. Such plumed seeds may frequently be seen parachuting into a room on any summer day when the windows are left open. So there is no dearth of embryonic willowherb plants during the summer months, even in the most thickly populated areas."

Rose-bay willowherb is edible though it is not eaten in Britain. In parts of North America and the northern parts of Europe, on the other hand, people boil the young shoots and eat them as they do asparagus. The young stems and leaves are sometimes used as pot-herbs. The dried leaves have been used for adulterating tea.

A close relative of the rose-bay willowherb in form, habit and habitat, in fact, a member of the same family, is the evening primrose, which is the only common representative of the genus *Oenothera*, a fairly large genus native to America. The roots of this genus of plants have a wine-like smell and are much sought after by wild animals. This is indicated by the generic name, which is from the Greek *oinos*, wine, and *ther*, wild animal.

The evening primrose (*O. biennis*) is not native to Britain, but now it has escaped cultivation here and frequently appears on waste ground and in coastal areas. Like the rose-bay willowherb, it often appears on bombed and other derelict sites. It is of historical interest too, for the great Dutch botanist, Hugo de Vries, carried out many of his pioneer experiments in plant hybridisation and genetics on the evening primrose.

The plant is a biennial growing two to three feet high. Like rose-bay willowherb, it bears masses of large, lance-shaped, slightly toothed leaves. The very large yellow flowers, one and a half to three inches in diameter, appear during June to September. Fundamentally they are similar to rose-bay willowherb, but are quite regular. The plant is called evening primrose because of the colour of the flowers and because these open towards the evening. Alas! each flower lasts only until the next day. During the evening and night its delicate scent attracts nocturnal moths which have long tongues, for the flower has a long tube and the nectar is at the bottom.

When once the sun sinks in the west,
And dew-drops pearl the Evening's breast ;
Almost as pale as moonbeams are,
Or its companionable star,
The Evening Primrose opes anew
Its delicate blossom to the dew ;
And hermit-like, shunning the light,
Wastes its fair bloom upon the Night.

J. CLARE

Fool's parsley, a tall graceful plant now in its glory, grows frequently in masses in all sorts of waste places, along the waysides, the hedgerows, in



Harold Bastin

FOOL'S PARSLEY

of the plant, though this reflexion cannot be whole-heartedly supported, for fool's parsley is beautiful when in flower. It is called fool's parsley because though in its young stages it closely resembles the edible parsley it is not the same plant of course, though both fool and edible parsleys are members of the same family. But edible parsley belongs to a different genus (*Carum petroselinum*).

Fool's parsley grows two to three feet high. The stems are hollow and round, but marked by fine grooves which pass down them longitudinally. The large triangular leaves are almost fern-like, for they are divided into smaller triangular pinnae which are again divided into lobes right down to their mid-ribs and these lobes are again lobed.

There can be no mistaking fool's parsley if one closely examines the white umbels of flowers because, though the common point of the compound umbel bears no bracts, that of each constituent simple umbel bears three and each of these is long and green and points outwards and downwards. The structure of the flower is typical of the family (p. 165).

Among other umbellifers which bloom along the waysides during July is hedge parsley (*Caucalis anthriscus*). The generic name is from the Greek *kaukos* which is derived from *kaio*, to burn, for the leaves have a

fields and sometimes even on cultivated ground. This month and in August its umbels of small white flowers are presenting a foamy mass of white — often an arresting display. In the West Country this plant is often called snake's food, though nobody knows why. It is a very typical umbellifer (UMBELLIFERAE, Dicot., p. 165); in fact, it is perhaps the most common of all umbellifers (Plate 19).

Fool's parsley is the only common representative of the genus *Aethusa* (*A. cynapium*). The generic name is from the Greek *aithos*, fire, for the whole plant has a burning taste; in fact, it is slightly poisonous. The specific name, from the Greek *kyon*, dog, and *apion*, parsley, reflects the useless, indeed almost worthless, character

burning taste like those of fool's parsley. The specific name is from the Greek *antherix*, a hollow stalk.

This tall annual (two to three feet) presents its compound umbels of white flowers during July to September. The plant's leaves are not so finely divided as those of fool's parsley, and there are long bracts at the common base of the compound umbel. The fruits are large, but they are not furrowed. They are covered with hooks.

Edmund Blunden's observations of wild parsley is beautifully expressed, though it is not possible to decide which of the several "wild parsleys" he had in mind.

This time of year the sparrow takes
Wild parsley for a tree,
And the wild parsley scarcely shakes
Beneath his liberty ;
The ease of summer's full-bloomed body
Becomes bright corn and oakwood shady.

Full Bloom : EDMUND BLUNDEN

Wild parsnip (*Peucedanum sativum*), forerunner of the cultivated form, also of the family UMBELLIFERAE, Dicot., grows along waysides ; but it is not very common. The roots of the wild form yield a bitter resin as indicated by the generic name which is from the Greek *peukedanos*, bitter : the specific name is a derivative of the Latin for cultivated or sown.

This umbellifer is a biennial and grows two to four feet high. Its leaves are very like those of the cultivated form : they are by no means so finely divided as are those of other umbellifers, such as fool's parsley. Each leaf is composed of about five pairs of lateral pinnae and a terminal one, all of which are broadly oval but fairly deeply serrated.

The small flowers appear during the plant's second year, in July and August. They are borne in typical compound umbels, but instead of being the usual white or cream they are yellow.

The docks, of which there are about a dozen important and several less-important species, have been in evidence vegetatively for some time since their large leaves render them very conspicuous. But apart from the curled dock (p. 350) none of them can be expected to bloom before July, and then they all do so but in a variety of habitats. All docks belong to the genus *Rumex* of the family POLYGONACEAE, Dicot. (p. 236). The sorrels of pastures belong to the same genus (p. 237).

By the waysides and in the hedgerows, three docks may now be found in bloom — broad-leaved dock, sharp dock and red-veined dock, though the last-named is rarer than the others and usually prefers much moister habitats.

Broad-leaved dock (*R. obtusifolius*) is a perennial which grows two to four feet high. The very large leaves have long stalks, and the blades of those given off from the lower part of the plant are five to twelve inches



Ernest G. Neal

BROAD-LEAVED DOCK

long, very broad (more so at the base) and blunt at the tip. The broad character is indicated in the common name; the blunt apex is reflected in the specific name which is from the Latin *obtusus*, blunt, and *folium*, leaf. There are long, tissue-like sheathing stipules which are wrapped around the supporting stem for some distance up from the node. This is an outstanding characteristic of most docks. Passing up the stem the leaves become smaller and more lance-shaped.

The small, insignificant flowers are borne in crowded whorls which form a very long inflorescence. These appear during July to September. They are green when young but reddish-brown when ripe. Each flower is regular, having two whorls of three small sepals each, six stamens and three carpels, the last-named being fused but having three fairly long styles, for the flower

is wind-pollinated. (In being hermaphrodite, dock flowers differ from the sorrels of the same genus.) The fruit takes the form of a triangular nut.

Sharp dock (*R. conglomeratus*) prefers damp places. It is also a perennial but not so tall as the broad-leaved dock, for it usually grows one to three feet high. It blooms during the same season. Its leaves have no sheathing stipules (which is the exception). The leaves are somewhat like those of the broad-leaved species though smaller and with fairly sharp apices. The inflorescences are not so crowded as those of the broad-leaved dock, for each whorl is separated from the next on the axis, and between many such whorls is a small leaf. The specific name is from the Latin meaning rolled together, referring to the flowers, though this would seem to apply to the flowers of most docks.

The red-veined or blood dock (*R. sanguineus*) also prefers damp habitats, in waste places and even woods. Its leaves are like those of the sharp dock, but the veins are bright red. The inflorescences are fairly dense with no intervening leaves.

In parts of America the young leaves are used as table greens. It is noticeable how much like the docks is the cultivated rhubarb, especially

in their inflorescences. In fact, rhubarb (*Rheum rhaponticum*) belongs to the same family.

More members of the family POLYGONACEAE, Dicot., are to be found in waste places blooming during July. For example, of the genus *Polygonum* we have already met bistort (*P. bistorta*), black bindweed (*P. convolvulus*) and pale persicaria (*P. lapathifolium*). Now we meet another, namely, spotted persicaria (*P. persicaria*).

Spotted persicaria is an annual, growing one to two feet high and is therefore somewhat smaller than pale persicaria (p. 456); but apart from this the two are vegetatively similar. The leaves of spotted persicaria, however, are narrower; in fact, very like the leaves of the peach, as the specific name implies (Latin *persica*, peach). The leaves are also sometimes spotted. The flowers are borne in similar inflorescences and structurally they are very like those of pale persicaria, though of a deeper rose-colour (but, as in the pale species, white flowers sometimes occur). The floral season for spotted persicaria is longer — July to October.

Even more common though less conspicuous is knotgrass or knotweed (*P. aviculare*) which occurs in waste places and frequently also on open cultivated ground. The specific name of this plant is derived from the Latin *avis*, bird, for its fruits are one of their favourite foods. Knotgrass is a procumbent annual herb which trails six inches to a yard in all directions from its central point. It is therefore a nuisance when it occurs as a weed. Furthermore it sometimes grows among other plants (frequently cultivated crops) and is so persistent that it strangles them and stifles their growth. This perhaps explains the old wives' belief that a diet of knotgrass will hinder human growth.

Get you gone, you dwarf;
You minimus, of hindering knot-grass made;
You bead, you acorn.

A Midsummer Night's Dream, Act III, Sc. 2: SHAKESPEARE

The small, oblong leaves with silvery-fringed stipules are arranged alternately on the stem but they are spaced fairly far apart.

During July to September, insignificant pink (or white) flowers occur in almost every leaf-axil — several flowers to each axil. The flower is similar in structure to that of persicaria.

Buckwheat is another member of the family POLYGONACEAE, Dicot., but it belongs to a different genus, *Fagopyrum*, so named because its triangular fruits resemble beech-nuts (Latin *fagus*, beech, and *pyros*, wheat). In fact, the common name is from the Dutch *boekweit*, meaning beech-wheat.

Buckwheat (*F. sagittatum*) is an annual which grows one to two feet high mainly on waste ground near cultivated ground. But it is not

common. Its leaves are arrow-shaped as indicated by the specific name which is from the Latin *sagitta*, arrow. The small, pale-pink flowers appear in panicles during July to September. This plant is a favourite food with pheasants. In North America, another buckwheat, *F. esculentum*, is cultivated for its floury seeds, and the entire plant is used as fodder.

Two members of the beetroot family (CHENOPODIACEAE, Dicot., p. 351), a family in many respects similar to POLYGONACEAE, now appear in bloom in waste places. One, the red goosefoot, is a close relative of Good King Henry (p. 351), and is therefore included in the same genus, *Chenopodium*. But red goosefoot (*C. rubrum*) is not so common as the prolific white goosefoot (p. 536) or fat hen, so detailed consideration will be avoided. Suffice it to note that red goosefoot is an annual of considerably varying height (five inches to three feet) which grows on waste and open cultivated ground. Both vegetatively and florally the plant is very similar to white goosefoot except that the leaves are more deeply lobed and there is no mealy appearance about them. The flowers, too, are crowded into large heads. These appear during July to September. Sometimes the plant has a reddish tinge.

Orache is the other member of the family CHENOPODIACEAE, Dicot., which blooms in waste places during July. It also grows on cultivated ground and sometimes on the seashore. But it belongs to a different genus, namely *Atriplex*. This name is possibly a corruption of *atrappaxis*, a name given by Dioscorides. Some authorities derive it from the Greek *a* (intensive particle), and *triplex*, triple, for both fruits and leaves are triangular. Still others claim that it is from the Greek *a*, not, and *trephein*, to nourish, for the plant is useless either as food or fodder.

Common orache (*A. patula*) is like the goosefoots in general appearance and is an annual growing one to four feet high. The stems are furrowed and frequently tinged with red. The main stem stands upright, but the branch stems hang over prostrate, giving the whole plant an open appearance. This is indicated in the specific name *patula*, from the Latin for lying or standing open. The lower leaves are perfectly triangular with the two sides deeply but irregularly notched. The upper leaves are smaller and narrower. The flowers are borne in small, interrupted spikes like those of *Chenopodium* species. They appear during July to September. They may be unisexual or hermaphrodite, but the number, size and form of floral parts is the same as in *Chenopodium*. The main difference between the two genera is that in *Atriplex* the single seed is enclosed in two, triangular, foliar valves.

Dyer's weed or dyer's rocket (not to be confused with dyer's green weed, p. 435) is another plant which bears dense inflorescences of very



small flowers, presenting them during July and August. This plant favours waste places on limy and chalky soils. It is the third and only other British member of the genus *Reseda* of the family RESEDACEAE, Dicot. The other two are the mignonettes (*R. alba* and *R. lutea*) already considered (p. 354).

Dyer's weed (*R. luteola*) is a larger plant than the other two, growing two to three feet high. Like the mignonettes, it is biennial. Its specific name has the same derivation as that of *R. lutea* (from the Latin *luteus*, yellow), for its flowers, too, are yellow. Unlike the mignonettes, the leaves are undivided, the upper ones being long, narrow and lance-shaped, the lower ones broader at their bases. The small flowers are borne in long, dense, terminal spikes. The floral structure is similar to that of the mignonettes, though there are only four sepals.

A yellow dye was once extracted from dyer's weed, hence the name. For this reason it is sometimes also known as yellow weed. Just as in the case of dyer's green weed, this dye was at one time mixed with woad (*Isatis tinctoria*) to give a green dye. That explains the other less-common names of weld or dyer's woad.

In waste places, along waysides and sometimes also in dry thickets and other bushy places, the not very common orpine or live-long displays its deep purple flowers during July and August. This plant belongs to the stonecrop family (CRASSULACEAE, Dicot., p. 379), and like most other members of the family it has to practise water economy, which it does by storing water in its oval, fleshy leaves. Orpine (*Sedum telephium*) belongs to the same genus as the stonecrops. It was probably named after Telephus, son of Hercules, the healer of wounds. It derives its alternative common name, live-long, from the fact that it will remain fresh for a very long time after being uprooted.

Orpine is the tallest of the genus *Sedum*, sending up flowering shoots six to twenty-four inches high. It is a perennial. The large oval leaves have blunt teeth. The deep purple flowers are massed in terminal branched heads



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ORPINE

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forming corymbs. Each flower is structurally similar to that of the stonecrop (p. 381).

In years gone by, village maidens fixed a spray of this plant on the wall on Midsummer Eve. If the leaves drooped to the left, their lovers were false; if they drooped to the right, they had nothing to fear. So in some rural areas the plant is called midsummer men.

The less common of the two mercuries, the annual mercury, may now be found growing in waste places and sometimes also on cultivated ground. It is a close relative of the dog's mercury (*Mercurialis perennis*) — a much earlier flowering plant (p. 124). The mercuries belong to the spurge family (EUPHORBACEAE, Dicot., p. 113).

Whereas dog's mercury is a perennial growing under the protection of hedges and woods and blooming very early in the year, annual mercury (*M. annua*) is an annual growing on open ground and blooming until very late in the year — from July until November. In general habit the two plants are similar, though the leaves of the annual species are smoother than those of the perennial. The unisexual flowers of the annual species are borne in similar inflorescences and are of the same structure as those of dog's mercury, though in the case of the annual both sexes might be found on the same plant.

Having considered some of the less conspicuous and less interesting of the waysides and waste places of July, we may now return to a few of the more attractive plants. There is, for example, the bloody crane's bill which favours waste and rocky places. Like all other crane's bills, it belongs to the *Geranium* genus of the family GERANIACEAE, Dicot. (p. 177). Several species of this genus, such as *G. pratense* (p. 333), *G. molle* (p. 178) and *G. robertianum* (p. 224), have already been met and described.

Bloody crane's bill (*G. sanguineum*) is a fairly bushy perennial which grows one to two feet high and presents its usually solitary crimson flowers during July and August. Its stems are hairy and its leaves more deeply cleft than those of meadow crane's bill (p. 333). Each ground-level leaf is cut palmately into seven lobes and each cauline leaf is cleft into three. Apart from colour, the flowers and peculiarly splitting fruits are similar to those of the meadow crane's bill.

A few new composites (COMPOSITAE, Dicot., p. 126) must be expected in waste places and along waysides during this month. There is, for example, the yellow or ox-eye chamomile which, though not native, can often be found growing in such habitats and on railway embankments. This plant is closely related to corn chamomile (p. 364), stinking mayweed (p. 364) and common chamomile (p. 487); in fact, it belongs to the same genus as these (*Anthemis*).

Yellow chamomile (*A. tinctoria*, from the Latin *tingo*, to dye) is a



Harold Bastin

BLOODY CRANE'S BILL

perennial growing six inches to two feet high. It is very like corn chamomile (p. 364) except that all the flowers of the flower-head, both disk and ray, are yellow in colour. The large flower-heads appear during July and August (*Plate 18*).

Then there are the two hawk's beards, the smooth and the rough, of the genus *Crepis*, a genus indigenous to most parts of the northern hemisphere and to South Africa and South America. The generic name is derived from the Greek for a sandal, for the leaf is supposed to resemble one. Neither of these plants, nor any of the other hawk's beards, are particularly beautiful.

Rough hawk's beard (*C. biennis*) is, as its specific name implies, a biennial. It favours waste places and sometimes also cultivated ground. It blooms somewhat earlier than the smooth species, frequently opening out in June. It grows one to four feet high. The leaves are less robust than, though shaped very like, those of the dandelion. The stems are much branched, and at the end of each branch are the yellow flower-heads. Each head is composed of nothing but ligulate flowers enclosed in an involucre of fairly long green bracts.



NIPPLEWORT

Harold Bastin

Smooth hawk's beard (*C. capillaris*) flourishes on waste ground and on walls and the roofs of cottages. It is a perennial of varying habit, growing four inches to three feet high. It is more graceful than the rough species. The lower leaves are less indented than those of the rough, and the stem does not branch so much. The branches emerge from the axils of lance-shaped and slightly indented leaves. The flower-heads are yellow but less open than those of rough hawk's beard. They appear during July to September.

Nipplewort is a very dull composite. It commonly grows on waste ground, but also frequently occurs as a weed. It is the only British member of the small north temperate genus

Lapsana (*L. communis*). The generic name may be derived from the Greek *lapazo*, to purge, though Dioscorides applied the name *Lapsana* to the chickweed.

Nipplewort is an annual which grows one to three feet high and blooms during July to September. Its leaves are diagnostic of the plant. There is a large, triangular expansion at the top and a few opposite pairs of much smaller lobes at the base. The smaller leaves near the tops of the much-branched stem are simple but usually serrated. The yellow flower-heads are small and insignificant. Each is composed of a number of yellow ligulate flowers supported by a simple involucre of green bracts. The fruit has no pappus.

In olden days in some localities the leaves of this plant (locally called dockorenes) were eaten in salads.

Another member of the COMPOSITAE, Dicot., is the Canadian fleabane, and it is of particular interest because it has spread widely in recent years, mainly in waste places, and it has become familiar to people to whom bombed sites are, or were, an everyday experience, for in some parts it has vied with the rose-bay willowherb to colonise them. It is remarkable how this plant has spread. Actually it is North American, and according to one theory it arrived in Europe through the agency of one seed which

was in the stuffing of an American bird sent to Paris. The seed was sown in Paris and eventually the plant spread widely by means of its plumed fruits. It is certainly interesting that the Rev. C. A. Johns, writing about forty-five years ago, referred to it as "a weed in waste ground and on old walls in Chelsea and elsewhere". Anyhow there is no difficulty in finding it now, and when blooming during July to September it is quite handsome.

Canadian fleabane is of the same genus as that of the blue fleabane (p. 442), namely, *Erigeron* (*E. canadensis*). It is an annual growing six inches to two feet high with hairy stems and lance-shaped leaves, those nearer the base being broader than the upper ones. The flower-heads are small, only about a quarter of an inch in diameter, and there are many of them borne on branches at the ends of erect stems. The tubular disk flowers are pale yellow, whereas the ligulate ray flowers are dingy yellow tipped with reddish-purple.

The true Scotch thistle or cotton thistle grows mainly on waste ground, though it is so common that it appears in many other places also. In fact, it is probably the most common of all the many thistles. It is this plant which has been chosen as the emblem of Scotland, though nobody is quite sure why.

It is claimed that King Achaius of Scotland adopted the thistle as the national emblem so far back as 809. Another legend has it that when the Danes were about to attack the sleeping Scots one of their number trod on a thistle and his yells of pain gave adequate warning to the Scots who in gratitude adopted the plant. The earliest mention, however, of the thistle as the Scottish national emblem dates back to James III of Scotland (1460-88). It was certainly used by James V in 1540. Another legend states that a former Queen of Scotland fastened some thistles to her helmet, exclaiming "Wha daur meddle wi' me". In 1687, James VII (James II of England) instituted the Order of the Thistle with the motto *Nemo me impune lacessit*. This is one of the senior British Orders of Chivalry. At first it consisted of the sovereign and eight knights. Now there are sixteen knights. The collar of the regalia is decorated with thistles alternating with rue.

It was a thistle which Ruskin used for illustrating his idea of the faults of the Scot.

. . . the stubbornness and ungraceful rectitude of its stem, and the besetting of its wholesome substance with that fringe of offence, and the forwardness of it, the dominance. . . How literally may we go back from the living soul symbolised to the strangely accurate earthly symbol, in the prickly weed!

Proserpina: RUSKIN

The Scotch thistle is the only British representative of the genus *Onopordon* (*O. acanthium*). The generic name is Greek for cotton thistle; and the specific name reflects its prickly nature, for it is derived from the

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Greek *akantha*, a thorn. It is a tall biennial growing two to six feet high and presenting its striking purple flower-heads during July to September. The large, cottony leaves are lance-shaped but deeply toothed and the whole margin presents sharp prickles. Wide prickly flanges pass down the stem from the leaves.

The green involucre of the flower-head is almost spherical and its bracts extend in all directions in the form of sharp prickles. The purple flowers are all tubular. When the fruit is ripe the pappus is composed of long, white silky hairs.

Among other composites, the star thistle which now appears in waste places, though it is not common (being confined to the south), is a nearer relative of the knapweeds (p. 345) and cornflower (p. 366) than it is of the familiar thistles. In fact it belongs to the same genus, *Centaurea*.

Star thistle (*C. calcitrapa*, from the Anglo-Saxon *coltraeppe*, a spiny thistle) is a strange-looking annual growing six inches to two feet in height. The leaves are composed of long, toothed pinnae. But the plant is most easily recognised by the purple flower-heads which appear during July and August. All the flowers are tubular. They are enclosed in a fierce-looking involucre which is made up of long bracts each of which ends in a stiff horn.

There is also the yellow star thistle (*C. solstitialis*, from the Latin relating to the middle of summer, though the flowers appear from June to October). This favours not only waste places but also cultivated ground. The flower-heads are yellow and the involucreal bracts are not so long and thorny, though they are still rather forbidding. It also is an annual. Its radical leaves are deeply, though simply, lobed; the cauline leaves are smaller but long, simple and practically shapeless.

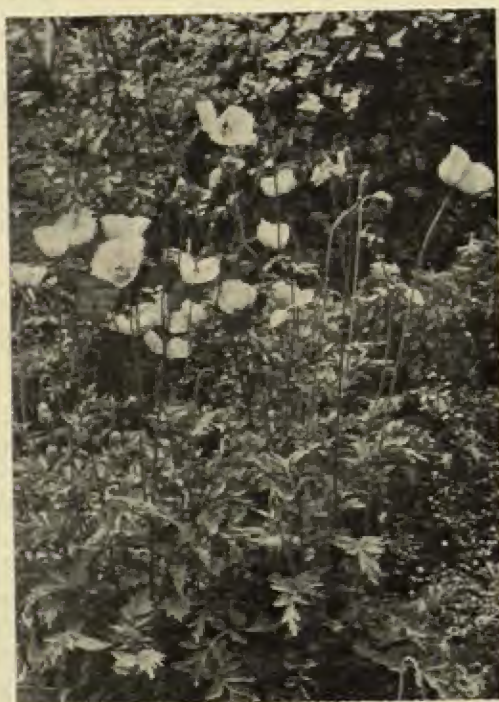
White horehound, which blooms in waste places during July to October is a typical member of the mint family (LABIATAE, Dicot., p. 158). It is the only British member of the genus *Marrubium* (*M. vulgare*). At one time it was official because a cough mixture was prepared from it. Its generic name is probably derived from the Hebrew *mar*, bitter, and *rob*, much, for the plant is very bitter. It is a perennial growing one to two feet high. Its leaves, borne in opposite pairs at right angles to each other, have long stalks and very broad, almost heart-shaped leaves with blunt serrations. The small white flowers are borne in axillary whorls.

The Welsh yellow poppy favours rocky places, though it is rare, seldom growing outside parts of Wales, the West of England and Westmorland. Though a typical member of the poppy family (PAPAVERACEAE, Dicot., p. 357), it is easily distinguished from the common red poppy (p. 357) in having yellow flowers, and from the yellow horned poppy (p. 524) in being more slender and graceful and having normal green,

not glaucous, leaves. Furthermore, the leaves are not so deeply cut as those of the common red poppy. The plant contains a milky juice. Its flowers appear during July (sometimes June) and August.

The Welsh yellow poppy is the only British representative of the north temperate genus *Meconopsis* (*M. cambrica*). Both generic and specific names are very descriptive; the former coming from the Greek *mekon*, poppy, and *opsis*, appearance, and the latter being Latin indicating a native of Cambria (Wales).

In waste places the not very common but rather pretty vervain may be found. It is the only British wild member



Harold Bastin

WELSH POPPY



Harold Bastin

COMMON VERVAIN

of the family VERBENACEAE, Dicot., which contains about seventy tropical and sub-tropical genera. Vervain belongs to the genus *Verbena* (*V. officinalis*), a genus popular with gardeners, for some of its species produce large and dense, almost spherical heads of flowers of different colours and often delightfully perfumed. The generic name is nothing but a modification of the Latin *herbena*, meaning something green. The common name is from the Celtic *ferfaen*. But the wild vervain, though fundamentally like the cultured species, is not so superficially attractive.

The plant is a perennial growing one to two feet high, and

THE FLORAL YEAR

displaying small lilac flowers in long spikes during July to September. The five sepals are united; so are the five petals, the latter to form a two-lipped tube. There are two long and two short stamens. The ovary is formed from two fused carpels.

Years ago vervain was considered, like euphrasy or eyebright (p. 257), to be a cure for eye troubles. It is also believed to be a protection against witchcraft. Moreover, in medieval times it was supposed to provoke merriment.

And thou, light vervain, too, thou must go after,
Provoking easy souls to mirth and laughter.

The Faithful Shepherdess: BEAUMONT AND FLETCHER

Finally, the monocotyledonous field garlic should easily be found along waysides. It belongs to the family AMARYLLIDACEAE, Monocot. (p. 110), and is included in the same genus as ramsons (p. 208), crow garlic (p. 340), etc., namely, *Allium*. Field garlic (*A. oleraceum*) is a perennial growing ten to eighteen inches high. Like other garlics, chives, onions and leeks (all of the same genus) it is edible, and this is reflected in the specific name, which is from the Latin *olus*, a culinary vegetable.

Field garlic is more like crow garlic than ramsons. It has long, strap-shaped leaves arising from a bulb. The brownish-white flowers are arranged in a similar inflorescence and they are based on the same floral design. They appear during July and August.

OTHER FLOWERS WHICH MAY APPEAR IN WAYSIDES OR WASTE PLACES DURING JULY

(*The number following each flower is the page on which it is mentioned or described*)

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Borage, 350	Dodder, Greater, 434
Bramble, 424	Feverfew, 431
Broomrape, Tall, 346	Goat's beard, 316
Bugloss, Viper's, 349	Good King Henry, 351
Burdock, 430	Grass, Annual meadow, 320
Buttercup, Common, 323	Grass, Timothy, 322
Celandine, Greater, 261	Gromwell, Common, 420
Chervil, 243	Hawkbit, Rough, 327
Chicory, 453	Henbane, 352
Cinquefoil, Creeping, 343	Herb Robert, 244
Clary, 244	Horchound, Black, 354
Crane's bill, Dove's foot, 178	Knapwood, Hardhead, 345
Crane's bill, Stinking, 224	Mallow, Common, 348
Daisy, 127	Melilot, Tall, 347
Daisy, Moon, 325	Mignonette, Wild Yellow, 354
Dandelion, 129	Milfoil, 441
Deadnettle, Henbit, 244	Mullein, Great, 355
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Nettle, Roman, 313	Sage, 244
Nettle, Small stinging, 313	Saxifrage, Rue-leaved, 183
Nightshade, Black, 454	Saxifrage, Three-fingered, 183
Nightshade, Deadly, 289	Self-heal, 445
Orpine, 381	Silverweed, 343
Parsley, Common beaked, 243	Sow-thistle, Common, 346
Persicaria, Pink (pale-flowered), 456	Stork's-bill, Hemlock, 255
Plantain, Greater, 336	Thorn-apple, 353
Plantain, Hoary, 337	Vetch, Common, 235
Plantain, Lamb's-tongue, 336	Vetch, Narrow-leaved, 178
Ragwort, 327	Woundwort, Hedge, 433
Yarrow, 441	

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WALLS

THE very familiar succulent houseleek is now thrusting up its robust stalks of reddish-purple flowers on old dry walls, the roofs of old cottages and on other stony sites, sometimes where it would seem impossible for any plant to obtain anchorage or the necessary nutriment. But houseleek belongs to that strange water-storing family, CRASSULACEAE, Dicot. (p. 379), all members of which have fleshy leaves or stems — some more than others — because they usually grow in habitats where liquid water for most parts of the time is in very short supply, so they have to practise the strictest economy and store what water they can in their fleshy organs. The stonecrops, orpine and wall pennywort have already been examined.

Houseleek is the only British wild, though not indigenous, member of the genus *Sempervivum*, a fairly large genus of plants native to southern Europe, the Himalayas and Abyssinia. Most members of the genus reproduce themselves vegetatively by means of offsets (see p. 476). Since these plants can withstand considerable desiccation they seem to live interminably sometimes under the most trying conditions, hence the generic name which is from the Latin *semper*, always, and *vivo*, alive (*cf.* orpine or live-long, p. 381).

Houseleek (*S. tectorum*, from the Latin *tectum*, living on a roof) is a perennial whose flowering shoot attains a height of one to two feet and reaches maturity during July and August. In olden days this plant was deliberately placed on the roofs of cottages to prevent the tiles from slipping. The large, fleshy, triangular leaves are spirally arranged in the most perfect rosettes. These are particularly attractive, especially when



Harold Bastin

HOUSELEEK

(though the inner whorl is usually sterile) and an ovary of twelve fused carpels.

Many varieties of houseleek are cultivated in rockeries, on old walls and even on garden monuments. Most of these varieties have been chosen for their handsome leaves which may be pale, bright or dark green, red or maroon; and sometimes they are variegated — one especially beautiful form being red with sea-green tips.

No-one can be unfamiliar with garden snapdragons (or snaps to the Americans) for they are a popular favourite. All are members of the genus *Antirrhinum* of the family SCROPHULARIACEAE, Dicot. (p. 226). They present their flowers in a wide variety of hues — white, cream, yellow, salmon, crimson, mauve and almost black; some are variegated. Some are small: others tall and robust. One species (*A. speciosum*) which grows on Catalina Island off the Californian coast is a shrub five feet high which bears bright scarlet flowers.

Snapdragons also grow wild. We have already met the lesser snapdragon or weaselsnout (p. 454). But the wild great snapdragon (*A. majus*) is even more difficult to find. In any event it was most probably

the edges of the leaves are tinged with purple, as they often are. They are very acid.

The plant reproduces itself vegetatively by means of offsets which are thick, short runners, at the ends of which new plants develop. So one often comes across a large plant surrounded by several smaller plants.

The flowering stalks grow erect. They too are thick and succulent and bear much smaller fleshy, pointed leaves arranged spirally along their entire length. At the top of the stalk an inflorescence of several large, reddish-purple flowers grows; each flower is anything from a half to one inch in diameter. The parts of the flower are in twelves — an unusual number — twelve lance-shaped and pointed sepals, twelve long, pointed petals, two whorls of twelve stamens each

a garden escape in the first place. It sometimes occurs on old walls and in limestone pits and chalk quarries. It is a perennial growing one to two feet high with masses of lance-shaped leaves crowding the base of the stem and arranged all the way up it in a close spiral. It displays its long racemes of very characteristic reddish-purple flowers during July to September.

The flower has a two-lipped corolla very characteristic of the family, the two lips being tightly compressed so that only strong nectar-seeking insects such as bees can force them apart. (*cf.* yellow toadflax, p. 438). Children like to press the corolla laterally, for that forces the two lips apart. Doing this a number of times gives the impression of a mouth opening and closing. So they sometimes call this flower chatterbox. The upper lip is bi-lobed and the lower tri-lobed, the whole effect being that of a mask. This is indicated by the generic name which is from the Greek *anti*: *rhis* (*rhinos*), like the nose or mask-like. Less complimentary and more localised names, such as calf's head and lion's head, suggest the same; so does weaselsnout, the local name for the lesser snapdragon.

Antirrhinum, more modest, takes the style
Of Lion's-mouth, sometimes of Calf's-snout vile,
By us Snapdragon called, to make amends,
But say what this chimera name intends?
Thou well deserv'st it, as old wives say,
Thou driv'st nocturnal ghosts and sprights away.

Plantarum: A. COWLEY

The rest of the floral structure of snapdragon is characteristic of the family. Unlike that of yellow toadflax, there is no corolla spur — merely a basal swelling.

Though snapdragons sometimes occur in uncultivated places, especially old walls, year after year, it is unlikely that any should be considered really wild except the reddish-purple form, though fundamentally none of them is wild. Yet so regularly do snapdragons appear on some walls that they give the same impression of permanence as the walls themselves. Cardinal Newman noticed this of the snapdragons which appear year after year on some of the old walls of Oxford.

There used to be much snapdragon growing on the walls opposite my freshman's rooms there, and I had for years taken it as the emblem of my own perpetual residence even unto my death in my University.—*Apologia*: NEWMAN

OTHER FLOWERS WHICH MAY APPEAR ON WALLS DURING JULY

(The number following each flower is the page on which it is mentioned or described)

Barley, Wall, 384
Celandine, Greater, 261

Cress, Hairy rock, 383
Hawk's beard, Smooth, 470

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Lettuce, Wall, 383
 Pearlwort, Annual, 264
 Pellitory-of-the-Wall, 383
 Pennywort, Wall, 382

Plantain, Greater, 336
 Saxifrage, Rue-leaved (Three-fingered), 183
 Speedwell, Wall, 183
 Stonecrop, Biting, 379
 Toadflax, Ivy-leaved, 260

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MOUNTAIN, MOORLAND AND HEATH

SHRUBS

ON mountain, moorland and heath, ling and heather are now in full bloom, sometimes covering acres of open ground with misty purple — a delight to the eye of the beholder, though the rambler looks upon this shrub as a mixed blessing, especially if he has to force his way through it bare-legged.

In such habitats gorse also is blooming, though not at its best (p. 95), for many of the fruits are now ripe and the popping of the pods may be heard on any hot, dry day.

But now our attention is drawn to the heaths and heathers. They all belong to the family ERICACEAE, Dicot., a family already met through the genus *Pyrola*, the wintergreens (p. 296). This is a large family containing altogether about fifty genera and 1400 species. It is distributed throughout the world except in deserts and very damp tropical forests. There are about a dozen British genera; but most of these are uncommon. The genus *Pyrola* is not very common. Perhaps the two most common genera are *Calluna* and *Erica*. To the former, the common ling or heather belongs; the latter contains cross-leaved heath and fine-leaved heath. There is some doubt as to whether ling or heath is the true heather; but today the genus *Calluna* is favoured.

Common ling or heather (*Calluna vulgaris*) presents its masses of rose-purple flowers during July to October on mountain, moorland, heath, cliffs and other fairly barren places. This plant is distributed throughout most parts of the northern hemisphere. (It is the only representative of the family in North America.) It is well distributed throughout Britain, though owing to its preference for barren, heathy places, it is much in evidence in Scotland (Plate 20).

No more these simple flowers belong
 To Scottish maid and lover;
 Sown in the common soil of song,
 They bloom the wide world over.

On Receiving a Sprig of Heather in Blossom: WHITTIER



Harold Bastin

COMMON LING OR HEATHER

Though in general common ling is a low shrub growing about one to two feet high, it sometimes attains a much greater height, up to four feet or more. This is well described by William Cobbett who observed masses of it in Kent in 1823.

I saw here what I never saw before — the bloom of the common heath we wholly overlook ; but it is a very pretty thing ; and here, when the plantations were made, and as they grew up, heath was left to grow on the sides of the road in the plantations. The heath is not so much a dwarf as we suppose. This is four feet high ; and, being in full bloom, it makes the prettiest border that can be imagined.—*Rural Rides* : W. COBBETT

It is quite probable that Cobbett was describing both heather and cross-leaved heath, for the two very often grow and bloom together.

The leaves of common ling or heather closely overlap each other in four longitudinal rows — a useful precaution for a plant which grows in such exposed positions.

The very small flowers are arranged in long terminal and axillary racemes. Each flower has four purple sepals, below which there are four greenish-purple bracts. Then there is a corolla of four joined rosy-purple petals. Within this are four stamens and an ovary made up of four fused

THE FLORAL YEAR

carpels with a long, common style. The fruit is a dry capsule to which the remains of the style and the sepals continue to be attached.

From the nectar of the heather flower an especially good honey is made, darker in colour and more highly flavoured than normal honey. At one time, besoms were made from the twigs of this plant, a use indicated by the generic name, *Calluna*, which is from the Greek *kallyno*, to sweep clean. The name ling is from the Old Norse *lyng*.

Sometimes white varieties of this plant occur, and these are considered lucky.

The genus *Erica*, like *Calluna*, is a large one. It is composed of about 500 species — European (mainly Mediterranean) and South African. The name is from the Greek *ereike*, heath. There are five British species. The most common are *E. tetralix*, the cross-leaved heath, and *E. cinerea*, the fine-leaved heath or bell heather, whose leaves are arranged in whorls of three. The other three species are rarer and much more localised in occurrence (*Plate 20*).

Cross-leaved heath (*Erica tetralix*) often appears among heather, especially in damper situations. It is not such a tall shrub (one to two feet) but it blooms at the same time, that is from July until October. Heath's rose-coloured flowers are larger, more pendulous and arranged



Harold Bastin

FINE-LEAVED HEATH OR BELL HEATHER

in much shorter but denser terminal racemes than those of *Calluna*. All the flowers of the raceme usually hang to one side. An outstanding vegetative difference between heath and heather is that whereas the leaves of the latter are tightly packed, overlapping each other, those of the cross-leaved heath are arranged in whorls of four, the whorls being equally spaced along the stem. This is indicated in the specific name which is from the Greek *tetra(kis)*, four(fold), that is, arranged in four rows.

The flower of *Erica* is somewhat different from that of *Calluna*. It is larger and there are no bracts subtending the sepals. Furthermore, the petals are closely united into a bell-shaped corolla with only five very small teeth at the rim to distinguish them. There are eight stamens and the long style protrudes well beyond the corolla tube. The nectar is secreted at the base of the flower, so since the latter is pendulous the nectar is uppermost. The visiting insect, usually a bee, in getting at this nectar, shakes the flower and this causes showers of ripe pollen grains to fall upon it. Thus is cross-pollination effected.

Many varieties of heather and heath are cultivated. These are of varying but pleasing hues. Both wild plants are sometimes used for bedding and thatching, mainly in Scotland. In some of the isles of the Hebrides young heath shoots are mixed with malt for brewing a liquor. A species (*E. arborea*) which does not occur in Britain but which grows along both south and north Mediterranean shores is a shrub one to five feet high. From its root-stocks briar pipes are made. The word briar in this connexion is from the French *bruyère* which means heath.

Since heaths and heathers abound in Scotland it is not surprising that her poets, especially Burns and Scott, have often referred to them, and some of the Scottish clans have chosen certain species as their emblems. For example, *Erica tetralix* is the badge of the Clan Macdonald and *E. cinerea* the badge of the Clan Macalister.

Although heath and heather plants make an inspiring sight when in bloom, and the bushy shrubs are useful coverts for game, sometimes such high masses of tough plants become so unmanageable as to be practically impassable even to grazing sheep.

Where the grouse lead their coveys thro' the heather to feed,
And the shepherd tends his flock as he pipes upon his reed.

Yon Wild Mossy Mountains: BURNS

At intervals, therefore, the heath and heather are burned away, a process known in parts of the West of England as swaling.

The heather on Scotch hills, when they were more used for sheep pasture than for sport, was often intentionally set on fire to burn down the old heather plants and leave room for fresh herbage. Such fires in dry weather travelled with amazing speed.—*The Lady of the Lake*: SCOTT

Most of us look for the cranberry plant when its small but tasty fruits are ripe; but that is later in the year (p. 580). Just now the plant, an

inhabitant of the boggy parts of mountain and moorland, is in flower. It belongs to the family VACCINIACEAE, Dicot., to which also belong bilberries and cowberries (p. 253). These earlier-blooming shrubs are included in the genus *Vaccinium*; so also was the cranberry at one time, but now it is usually placed in a separate genus — *Oxycoccus*, from the Greek *oxys*: *kokkos*, a bitter berry.

Cranberry or marsh whortleberry (*O. quadripetalus*) is a low-growing, creeping shrub with egg-shaped, evergreen leaves, glaucous beneath with recurved margins. The small red flowers are borne at the ends of the branches on fairly long thin stalks. There are a four-lobed calyx and a corolla, also deeply lobed into four (as indicated by the specific name). These lobes are very reflexed. The eight stamens are borne on long vertical filaments, and the ovary is made up of four or more fused carpels surmounted by a large style with a simple stigma. The fruit is described on p. 580.

Two small leguminous shrubs (LEGUMINOSAE, Dicot., p. 95), bearing especially attractive rose-coloured flowers, bloom during the months of July and September, though if the weather is warm they sometimes flower in June. These are the rest (or wrest) harrows — the common and the spiny.

The rest harrows are the only native British representatives of the genus *Ononis*, a fairly large European genus well represented in Mediterranean regions. There are three British species of *Ononis*, though *O. reclinata*, the small annual rest harrow, is very rare and confined to turf habitats near the coast. Though the other two species grow on heath and moorlands, the common rest harrow may also be found in other dry, sandy places, and the spiny rest harrow frequents coarse pastures and downs too. Both species also favour sites near the sea. When growing on farmed land, the plants are a nuisance because they have tough, creeping root-stocks, hence the common name rest or wrest, to stop the harrow. The generic name, which is from the Greek, also indicates the same. The presence of rest harrow (which in some parts is also known as cammock) is said to indicate a poor soil.

Common rest harrow (*O. arvensis*) is a procumbent perennial, creeping shrub with shoots one to two feet long. Its leaves may be simple, though they are usually trifoliate, each leaflet having irregularly serrated edges. Both stems and leaves are slightly hairy, and sometimes a few spines may be present (Plate 20).

The pink, delicately perfumed pea-like flowers are typically papilionaceous. The standard petal is exceptionally large and is veined with a deeper red. All ten stamens are united. Though it secretes no nectar, the flower is often visited by bees, which obtain only pollen for their trouble. This is no doubt because the flower is so attractive to them. The fruit pod is small and swollen and contains only a few seeds.



Since common rest harrow is of creeping habit, in some Floras its specific name is *repens*.

Spiny rest harrow (*O. spinosa*) is of erect habit, sending up shoots six to eighteen inches high. There are two longitudinal rows of hairs on the stem.

This species is very similar to the common species, though here the spines (something like those of gorse, but less tough) are more pronounced. The leaves are similar, so are the flowers. The pod is larger.

At one time, the spiny species was known as pin-weed.

Where the blushing pin-weed's
flower

Closes up at evening hour.

Solitude: J. CLARE

HERBS

Among the grasses (GRAMINEAE, Monocot.) peculiar to moorland is the purple moor grass (*Molinia caerulea*), of which there are several sub-species, though the most common is a perennial which grows one to four feet high, displaying its long, narrow panicles of purple flowers during July and August. This genus was named after the eighteenth-century Jesuit missionary, J. Molina. The specific name indicates the colour of the flowers, coming from the Latin *caeruleus*, dark blue.

Now is the time to look for the lovely harebell displaying its pendulous bells of sky-blue flowers in a variety of habitats, including turfy pastures, railway embankments, but above all on heaths, frequently occurring among the flowering heather. If the weather is kind, harebells bloom in June, though their best flowering season is July to September.

O'er the round throat her little head
Its gay delight unbuoys :
A harebell in the breeze of June
Hath such melodious poise ;
And chiming with her heart, my heart
Is only hers and joy's.

Harebell and Pansy: LAURENCE BINYON



Harold Bastin

COMMON REST HARROW

THE FLORAL YEAR

Let merry England proudly rear
Her blended roses, bought so dear;
Let Albin bind her bonnet blue
With heath and harebell dipp'd in dew.

Rokeby: SCOTT

The harebell is the 'bluebell of Scotland', but of course it is not related to the common bluebell (*Scilla nutans*, p. 205), the latter being a Monocotyledon. But frequently in literature, when a bluebell is mentioned, it is the harebell which the author had in mind. On the other hand, some poets, including Shakespeare, have had *Scilla nutans* in mind when writing of the harebell. But the name harebell, or hair-bell as Johns calls it, is more appropriately applied to the plant now under consideration, for its stems are almost as thin as hairs, whereas there is nothing hair-like about *Scilla nutans*.

The harebell is the most common wild member of the bellflower family (CAMPANULACEAE, Dicot., p. 416), and it, together with bellflowers themselves (p. 416), is placed in the genus *Campanula* (*C. rotundifolia*). Frail though it looks, it is a hardy perennial growing six to eighteen inches high (Plate 20).



HAREBELLS

Harold Bastin

JULY

On the windy hills
Lo, the little harebell leans
On the spire-grass that it queens
With bonnet blue.

GEORGE MEREDITH

The stems, and especially the flower-stalks, are very slender and graceful. There are three forms of leaves which merge into each other. The radical, ground-level leaves are roundish and broadly serrated, in fact, almost heart-shaped; those on the lower parts of the plant are lance-shaped but broad; those growing higher up are narrow and almost grass-like.

The beautiful bells are borne in very open racemes, with a few flowers to each raceme. Each flower hangs on a thread-like stalk. There are five long, narrow, green sepals which are united only at their bases. The five blue petals form the bell with five recurved lobes at the rim. The five stamens are fused at their bases with the ovary, which bears a long, hairy style. The fruit is a capsule which gradually turns upright as it ripens. It is topped by the remains of the sepals and petals and there are valves on its upper rim through which the seeds are scattered as the capsule sways in the wind.

Or, not less pleased, lay on some turret's head,
Catching from tufts of grass and hare-bell flowers
Their faintest whisper to the passing breeze,
Given out, while mid-day heat oppressed the plains.

The Prelude: WORDSWORTH

A herbaceous member of the heather family (ERICACEAE, Dicot., p. 478), namely, the round-leaved or larger wintergreen, occurs on heaths; but it is very rare and is confined mainly to the south-east of England. It belongs to the genus *Pyrola* (*P. rotundifolia*). This perennial evergreen grows eight to twelve inches high and displays its long spikes of white flowers during July to September. The floral structure is similar to that of other wintergreens (p. 296); but the diagnostic feature of this species is the bent style which first curves downwards and then, towards the tip, curves inwards.

Marjoram also blooms during July and continues to do so until towards the end of September. Its favourite habitats are heaths and dry, calcareous hillsides, though I have often found it growing on the edges of cultivated soil if the latter be chalky. This plant, a favourite pot-herb in days gone by more so than today, is a member of the mint family (LABIATAE, Dicot., p. 158).

Here's flowers for you,
Hot lavender, mints, savory, marjoram.

The Winter's Tale, Act IV, Sc. 3: SHAKESPEARE

Marjoram is the only British representative of the genus *Origanum*, a small European genus which derives its name from the Greek *oros*, moun-



Harold Bustin

MARJORAM

tain, and *gamos*, beauty, though it thrives in many parts which are far from mountainous provided they are calcareous. The common name marjoram, and the older alternatives marjerain and margeron are corruptions of the Latin *amaracus*.

Marjoram (*O. vulgare*) is a perennial which grows one to two feet high. It spreads vegetatively by means of a creeping root-stock. The stems are tall, thin and woody. The stalked, oval leaves are borne in widely separated pairs. The small purple flowers are arranged in dense, flat, terminal and axillary panicles. Each flower is subtended by a long coloured bract. The petal tube is almost regular though the upper lip is composed of two lobes and the lower of three.

The entire plant is aromatic, like so many other members of the mint family. That is why it is used as a pot-herb. Two other species are cultivated for this purpose: they are *O. majorana* (sweet marjoram) and *O. onites* (pot marjoram). The tops of the plant are cut just as they are beginning to bloom.

At one time, marjoram (*Origanum*) was considered to have medicinal virtues.

The tortoise having tasted the viper sucketh *Origanum* and is quickly revived.

—*Euphuus*: LYL

More species of St. John's worts (*Hypericum*, HYPERICACEAE, Dicot., p. 418) will be discovered on heaths and moorland now in full bloom. Perforated St. John's wort (*H. perforatum*) should be found with ease, though this species favours a variety of habitats including woods (p. 418).

Trailing or creeping St. John's wort (*H. humifusum*, from the Latin *humus*, soil, and *fusus*, spread out) is a procumbent perennial sending out spreading stems four to ten inches long and displaying its fairly small yellow flowers during July and August. Its leaves contain no oil glands, as some other species do.

Upright St. John's wort (*H. pulchrum*) is a fairly tall, erect perennial (six inches to two feet) which also bears yellow flowers during July and August. When the flowers are in bud their tips have a reddish tinge.

Another of the chamomiles (*Anthemis*, COMPOSITAE, Dicot., p. 364), the common chamomile (*A. nobilis*), grows on heaths and other turfy sites, displaying its white flower-heads during July to October. It is not a very tall plant, growing three to twelve inches high, though it tends to be procumbent. The whole plant is pleasantly aromatic. The slightly downy leaves, smaller than those of other species, are repeatedly cut into fine segments. The flower-heads are borne on solitary stalks, and, considering the usually sombre surroundings of the plant, they stand out conspicuously as indicated by the Latin specific name. The disk flowers are tubular and yellow: the ray flowers ligulate and white. The latter droop before the flower-head is quite mature, then they stand out firmly.

The second, and only other British genus of the small flax family (LINACEAE, Dicot., p. 450), namely, *Radiola*, is represented in Britain by one species, *R. linoides*, known in some parts as allseed, in others as thyme-leaved flaxseed. This appears on the bare parts of certain damp heaths, but it is far from common. (This plant must not be confused with the very rare four-leaved allseed, *Polycarpon tetraphyllum*, a member of the pink family.)

Thyme-leaved allseed is one of the tiniest of British flowering plants, growing only one to three inches high and having much-forked branches which grow out in all directions. This habit is indicated by the generic name which is a diminutive of the Latin *radius*. Small ovate leaves are borne in pairs on the stem wherever it forks.

During July and August, this minute plant can scarcely be missed, for it is covered with a mass of very small white flowers. Each of these has four, deeply toothed sepals, four petals, four stamens and an ovary made up of four fused carpels surmounted by four free styles.

OTHER FLOWERS WHICH MAY APPEAR ON MOUNTAIN, MOORLAND AND HEATH DURING JULY

(The number following each flower is the page on which it is mentioned or described)

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Bird's foot, 255	Gorse, 94
Broomrape, Greater, 258	Grass, Matweed, 379
Campion, Moss, 250	Green weed, Petty, 252
Catchfly, Dwarf, 250	Lousewort, Field, 175
Cat's ear, Long-rooted, 328	Lousewort, Heath, 175
Clover, Slender, 374	Milkwort, 339
Cowberry, 373	Orchis, Spotted, 378
Cow-wheat, Common, 216	Pearlwort, Heath, 374
Dogwood, Dwarf, 373	Pink, Cheddar, 374
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Sheep's-bit, 376	Whin, Needle, 252
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MOISTURE-LOVING PLANTS, SEMI-AQUATICS AND AQUATICS

DURING this, the hottest part, of the year, the coolest of habitats — marshes, ponds, lakes, ditches, streams and rivers — offer their maxima of flora.

DAMP MEADOWS AND OTHER HUMID SITES

In damp meadows and other very humid though not entirely waterlogged marsh land, a number of those plants already met are still flowering. There are some new arrivals also, but nothing very startling — just a few moisture-loving species of genera and families by now familiar to us.

There is, for example, the knotted pearlwort or knotted spurrey, of the genus *Sagina* (p. 262), belonging to the pink family (CARYOPHYLLACEAE, Dicot., p. 99). It favours damp, sandy places. Though, like most pearlworts (pp. 262, 264), the knotted species (*S. nodosa*) is small, usually growing less than six inches in height and having very small, narrow, lance-shaped leaves, it is much branched and the branches are almost erect. Furthermore, its white flowers which appear during July to September are less numerous but larger than those of most pearlworts, and they stand out conspicuously because their five petals are longer than the five sepals. There are ten stamens and five styles. The specific name of this plant is from the Latin for jointed, for, in this respect, it is like most members of the pink family.

In damp meadows and even in wetter marshes the two St. John's worts (*Hypericum* species, HYPERICACEAE), Dicot., p. 418, namely, imper-

forate (*H. dubium*) and the square-stalked (*H. quadrangulum*) should not be difficult to find, though imperforate St. John's wort is more at home in hilly and mountainous districts.

Both are very typical of their family, having smooth, oval and sessile leaves borne in pairs, each pair at right angles to the next. The large yellow flowers are borne in massed terminal heads and appear during July to September. *H. dubium* has no oil glands, and its stem has four ridges with rounded angles: *H. quadrangulum* has oil glands in its leaves and the angles of the four-ridged stems are more sharply defined.

The mint family (LABIATAE, Dicot., p. 158) is represented in fields and other damp places (sometimes also, but not so often, in marshes) by the marsh woundwort. This species (*Stachys palustris*) is very similar to the hedge woundwort (*S. sylvatica*, p. 433), being a perennial growing one to three feet high; but it can be distinguished from the hedge-growing species since its serrated leaves are not so broad at the base and they taper more, and their flowers (also borne in whorls of six) are lighter purple in colour. They appear during July and August.

Among the composites (COMPOSITAE, Dicot., p. 126) which favour moist and watery places are the two fleabanes, the common and the small, both members of the genus *Pulicaria*. But these must not be confused with the blue (p. 442) and the Canadian (p. 472) fleabanes, both of which are members of a different genus, *Erigeron*.

Common fleabane (*P. dysenterica*) grows in moist and watery places, though it is seldom found in Scotland at all. Small fleabane (*P. prostrata*) is rare everywhere. The former blooms during July to September; the latter during August and September. These fleabanes, like the others, are abhorrent to certain insects: the generic name is from the Latin *pulex*, flea. In olden days, when the



Ernest G. Neal

COMMON FLEABANE

THE FLORAL YEAR

floors of houses were strewn with rushes and in consequence harboured fleas and other insects, fleabane was periodically burned in them. At any rate the smoke from it often succeeded in driving the insects away. Common fleabane is also considered by some to be a cure for dysentery, hence its specific name.

Common fleabane is a perennial growing one to two feet high and with yellow flower-heads. It is a sturdy-looking plant with large leaves, broadly lance-shaped, wavy, hairy and with irregularly toothed margins. These are arranged spirally on the stem and are stalkless, with the lower part of each blade partially encircling the stem.

The flowers are borne in perfect circular and flat capitula. Yellow tubular flowers form a compact disk. The long, yellow, ligulate ray flowers are closely packed in a single row. Each flower has a hairy pappus.

Then there are the bur-marigolds, the nodding and the trifold or three-cleft, also members of the COMPOSITAE, Dicot. These are the only representatives of the genus *Bidens*, a large composite genus. Both species favour moist places, even marshes. The generic name is derived from the Latin *bi*, two, and *dens*, teeth, since the seed bears two spurs.

Nodding bur-marigold (*B. cernua*, from the Latin *cernuus*, nodding) is a curious composite annual growing anything from two inches to two feet in height and presenting its brownish- or greenish-yellow button-like flower-heads during July to October. It tends to be succulent. The leaves are simple, long, lance-shaped and fairly regularly serrated.

There is no mistaking the drooping flower-heads. Each is enclosed in a very conspicuous involucre, the outer bracts of which are exceptionally long, spreading and leaf-like. Usually all the flowers are tubular. The fruit is interesting, for it is ridged by three to five longitudinal ridges, and at the top of the fruit each ridge is extended into a stiff bristle which takes



Harold Bastin

NODDING BUR-MARIGOLD

the place of a pappus. Each bristle is covered with backwardly pointing small barbs and by their means the ripe fruit steals a ride on any animal which contacts it.

Trifid or three-cleft bur-marigold (*B. tripartita*) is very like the nodding but its leaves are cleft into three serrated lobes. The flower-heads are somewhat smaller, but the spreading involucral bracts are larger.

Marsh ragwort (*Senecio aquaticus*), also of the family COMPOSITAE, Dicot., does not usually grow in marshes but prefers moist meadows. It is somewhat like the ordinary ragwort (*S. jacobaea*), though it is neither so tall nor so robust, growing one to three feet high and displaying its yellow flower-heads during July and August. The leaves are similar to those of ordinary

ragwort though they are not so large nor so much lobed. The flower-heads are very similar though they do not grow in such dense masses.



Ernest G. Neal

TRIFID BUR-MARIGOLD

MARSHES AND BOGS

Marshes and bogs this time of year, the height of summer, abound with flowers; though none of them is so conspicuous as those of earlier months, such as marsh marigold, cuckoo flower and iris. But some — usually the more localised or rare, such as grass of Parnassus and the insectivorous sundews — are of particular interest.

Grass of Parnassus grows in moorland marshes and bogs mainly in the north. Sometimes, however, it appears farther south, bedecking the most foul swamps. It is one of the few elegant marsh plants of July. It is a member of the saxifrage family (SAXIFRAGACEAE, Dicot., p. 183), the only British representative of the genus *Parnassia*, most members of which, in whatever clime they thrive, prefer marshy habitats. The genus is named after Mount Parnassus, the mountain of the Muses where, according to Dioscorides, the plants abounded (*Plat*: 22).



Dugald Semple

GRASS OF PARNASSUS

Grass of Parnassus (*P. palustris*) is a perennial which grows anything from three to eight inches high and has a strong root-stock. It is not much like the other saxifrages in general appearance. Most of the leaves grow from ground-level, each on a long stalk. The blade is shaped like an elongated heart with a fairly pointed apex and smooth margins. One or two smaller leaves may grow on the stem, and then they are sessile, the lower part of each blade almost surrounding the stem.

The star-like, white flowers, a half to one inch in diameter, appear solitary at the ends of long flower-stalks during July to September. There are five green sepals united only at their bases, and five open, salver-like, broad petals, white veined with green. The stamens are curious. There is a whorl of five normal ones, then, alternating with these, five completely modified so that they have lost their normal structure

and have become nectaries. Each is large and fan-shaped. The fan extends into about a dozen finger-like tentacles at the ends of which are glands which secrete nectar. The two carpels are fused to form a large, almost spherical ovary. Surmounting it are four stigmas with no intervening style. The fruit is a capsule.

Pale star that by the lochs of Galloway,
In wet green places 'twixt the depth and height
Dost keep thine hour while Autumn ebbs away,
When now the moors have doffed the heather bright,
Grass of Parnassus, flower of my delight,
How gladly with the unpermitted bay—
Garlands not mine, and leaves that not decay—
How gladly would I twine thee if I might!

Grass of Parnassus: ANDREW LANG

The most interesting plant to look for in bogs during this time of the year is the insectivorous sundew, one of the few insectivorous plants

(p. 49) indigenous to Great Britain. The sundews grow in acid bogs and in the moist hollows of sandy heaths. There are three British species which are included in the genus *Drosera*, the only genus in this country belonging to the family DROSERACEAE, Dicot., a family composed of nothing but insectivorous plants, yet one very closely related to the SAXIFRAGACEAE.

Round-leaved sundew (*D. rotundifolia*) is common in most parts of Britain; long-leaved sundew (*D. anglica*) is rare in the south of England: lesser long-leaved or the narrow-leaved sundew (*D. intermedia* or *longifolia*) is fairly well distributed but is not so common as the round-leaved.

All three plants are perennial, very small, with nothing but radical leaves. Those of *D. rotundifolia* form a rosette. Each

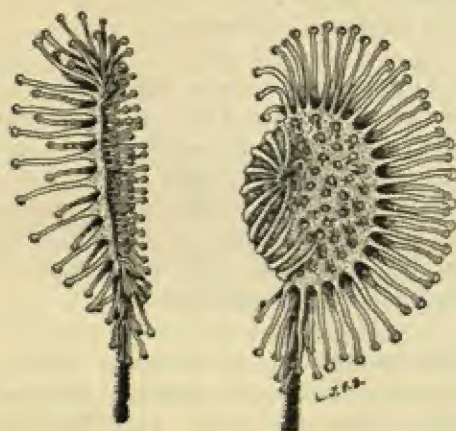


Ernest G. Neal

ROUND-LEAVED SUNDEW

leaf has a round blade borne at the end of a long hairy stalk. The blades of *D. intermedia* (*longifolia*) are long and spoon-shaped and they stand erect on their stalks. The blades of *D. anglica* are twice as long as those of *intermedia* and they are borne on oblique stalks.

It is the leaf which forms the insect-trapping mechanism in all three species. Each is green with patches of red; this combination of colours attracts the insects. The margins and upper surface of the blade are covered with long, hair-like tentacles—about two hundred to each



LEAF OF SUNDEW

Left, side view; right, front view after being touched with a pencil

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blade. Each tentacle ends in a club-shaped swelling which is covered with a sticky substance which looks like dew. When the insect alights on the leaf it is caught by this glutinous material. Then the tentacles bend over towards the mid-rib of the blade, with the result that the insect is pressed firmly against the surface of the leaf. The ends of the tentacles then secrete digestive juices which dissolve the nitrogen-containing parts of the insect. These food substances are then absorbed by the leaf. After absorption is complete, the leaf opens out again and the remains of the insect are blown away. This movement of sundew's tentacles can be stimulated by gently touching them with a pencil. Frequently the tentacles on the leaf look like drops of dew, hence the common name and the generic name which is from the Greek *drosos*, dew. The three specific names explain themselves. To the old herbalists sundew was *ros-salis*, and at one time it was called youthwort since it was supposed to have the powers of rejuvenation.

The small white sundew flowers are alike in all three species. They are borne on erect, thin, fairly tough flower-stalks, in all three species varying from two to eight inches high. The flower-stalks are curled when in bud. In all cases the flowers appear during July and August, forming small, open racemes with a tendency to be one-sided. Each flower has five sepals, five joined but regular petals, five stamens and a single-chambered ovoid ovary surmounted by six to eight styles. It is usually self-pollinated.

A little marsh-plant, yellow-green,
And pricked at lip with tender red.
Tread close, and either way you tread
Some faint black water jets between
Lest you should bruise the curious head.

The Sundew: SWINBURNE

Several other families, by now familiar to us, have representatives growing in marshes, etc., and blooming during July and onwards. There is, for example, the marsh bird's-foot trefoil, a member of the pea family (LEGUMINOSAE, Dicot., p. 95). It is a close relative of the bird's-foot trefoil (*Lotus corniculatus*) of meadows (p. 437). But marsh bird's-foot trefoil (*L. uliginosus*, from the Latin *uligo*, moisture) is a taller, erect perennial growing six inches to two feet in height. The entire plant is hairy. Its yellow flowers appear during July to September.

Another of the willowherbs (*Epilobium* species, ONAGRACEAE, Dicot., p. 287) also appears on the marshy scene. This is the marsh or narrow-leaved willowherb (*E. palustre*) which prefers acid bogs. Like all other species of *Epilobium*, it is a perennial. It grows six to eighteen inches high, displaying its rose-lilac flowers during July to September. The leaves are narrow with slightly toothed margins.

Another of the umbelliferous dropworts (*Oenanthe* species, UMBELLIFERAE, Dicot., p. 165), namely hemlock water dropwort (*O. crocata*), now blooms, mainly in marshy places. It is a tall, coarse, robust perennial attaining a height of two to five feet. It is poisonous; in fact, it has been known to cause casualties among cattle. The entire plant is larger than the parsley dropwort (p. 407). The root bears large root-tubers. The large compound umbels of white flowers open out during July and August.

Two bedstraws, close relatives of the lady's (p. 334) and the hedge (p. 428), all species of the genus *Galium*, thrive in marshes and bogs and bloom during July and August. They are marsh or water bedstraw (*G. palustre*) and bog or rough marsh bedstraw (*G. uliginosum*). Both are perennial, growing one to two feet high and bearing their leaves in whorls typical of the family (RUBIACEAE, Dicot., p. 181). The white flowers grow in panicles. But it is easy to distinguish between the two marsh-loving species, for *palustre* is much more robust with about four large leaves, though often of unequal length, to each whorl. On the leaf margins are very fine prickles. The fruit is smooth. *Uliginosum* is a much weaker plant with thin stems, about six much smaller leaves to each whorl and a rough, granulate fruit.

Among the composites (COMPOSITAE, Dicot., p. 126) is the marsh cudweed of the genus *Gnapholium* (*G. uliginosum*). This fairly large cosmopolitan genus is represented in Britain by about half a dozen species, none of which is very common and most of which grow in heathy or mountainous habitats. The leaves and stems — especially the latter — are very hairy, as is indicated by the generic name which is from the Greek *gnaphallon*, wool. Marsh cudweed is an annual growing two to nine inches high. Its spreading stem is much branched, giving a bushy plant bearing many small but long, lance-shaped leaves with smooth margins. The flower-heads appear over a long season (July to October), growing in crowded tufts which are frequently overgrown by the leaves. Each flower-head is enclosed in an involucre of yellowish-brown bracts. All the small yellow flowers are tubular, each having a pappus of long white hairs.

The scarlet pimpernel (*Anagallis arvensis*), of the natural order PRIMULACEAE, Dicot. (p. 368), has a relative in the bog pimpernel (*A. tenella*), a smaller plant which blooms in bogs during July and August. Its thin, delicate character is indicated by the specific name, which is from the Latin *tenuis*. Being of such a delicate and therefore weak nature, it tends to be procumbent, not growing much more than two or three inches high. Vegetatively it is very like the scarlet pimpernel, with much smaller, sessile, oval leaves borne in pairs. These are not spotted like those of the scarlet species. Structurally the flower is similar too; but it is pink and

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relatively larger, since the petals are much longer than the sepals. The flowers stand out conspicuously on small, erect stalks which grow up from the procumbent branches.

Of the many speedwells, species of *Veronica* (SCROPHULARIACEAE, Dicot., p. 180), *V. scutella*, the marsh speedwell is now in bloom. Unlike most speedwells, its flowers are usually pale pink or white, though they are typical in structure. The plant is a straggling perennial growing six to twelve inches high and bearing pairs of linear, lance-shaped, slightly toothed leaves all the way up the stem. The very small flowers are borne in open axillary racemes towards the ends of the branches. They appear during July and August. The fruit is a flat, shield-shaped capsule (*scutella*, from the Latin *scutatus*, diminution of the Latin *scutum*, a shield).

Several marsh-growing Monocotyledons break into bloom during July. Among them is marsh helleborine, close relative of the broad-leaved helleborine (*Epipactis latifolia*, ORCHIDACEAE, Monocot., p. 209). Marsh helleborine (*E. palustris*) is a much smaller perennial, however,

usually growing about a foot high. Its leaves are large, but not broad. They sheathe the stem at their bases, and their blades are lance-shaped and pointed. The flowers are borne in smaller and much more open racemes and are subtended by shorter bracts. Each flower is greenish or dirty white, marked with red or purple. The plant blooms during July and August.



Harold Bastin

MARSH HELLEBORINE

An interesting liliaceous plant (LILIACEAE, Monocot., p. 205) to look for in bogs is the bog asphodel, which spreads through water-logged soil by means of thick underground stems, sending up at intervals rigid and strong conspicuously parallel-veined leaves, sword-shaped and ending in a long point. Bog asphodel is the only British representative of the very small, north temperate genus *Narthecium* (*N. ossifragum*).

The generic name is a diminutive of the Greek *narthex*, rod, though the British representative bears little resemblance. The specific name is from the Latin, *os*, bone, and *frango*, to break, for once upon a time country-folk believed that if cattle ate this plant their bones became brittle.

The delightful golden-yellow flowers open out during July and August. They grow in fairly close racemes at the ends of erect stems six to twelve inches high. Small leaves are arranged on these stems in spiral fashion. The flower is typically liliaceous. There is a perianth of six long and pointed segments, six downy stamens, and an ovary of three fused carpels with one long style. Though conspicuous, the flowers secrete no nectar, so they are usually self-pollinated. The fruit is a long, red capsule containing numerous seeds.



Harold Bastin

BOG ASPHODEL

Of the many members of the sedge family (CYPERACEAE, MONOCOT., p. 270), the genus *Scirpus* is one of the most common. One of the most conspicuous British species is the bulrush (*S. lacustris*), so detailed consideration of this genus will be deferred until we find this species (p. 510). Meanwhile, in marshes the wood clubrush (*S. sylvaticus*) is now blooming and will do so during this month and August. In spite of its common and specific names, it favours marshes, though it is also to be found in moist woods. It is a very common perennial growing one to two feet high, similar to, though in all respects smaller than, the bulrush.

Several other species of *Scirpus*, all known as clubrushes, are to be found blooming in damp, semi-aquatic or aquatic (both fresh and salt) habitats at this time of year; but detailed consideration of such a large genus is impossible here.

BANKS OF RIVERS, PONDS AND LAKES

Here is the place where Loveliness keeps house,
Between the river and the wooded hills.

Here Is the Place; MADISON GAWWIN

River-banks and the edges of ponds and lakes are naturally luxuriant

THE FLORAL YEAR

with vegetation at the height of summer, and so many new flowers must now be expected, though since such plants are very sensitive to climatic conditions, it is likely that some of them will break into bloom in June if the weather is favourable.

The familiar buttercup family (RANUNCULACEAE, Dicot., p. 229), most of whose members bloom during the first part of the year — some of them very early, crops up again with the common or yellow meadow rue, a plant which grows not only along the banks of rivers and ditches but also in very moist meadows. It introduces a new genus, *Thalictrum*, a small north temperate genus whose name is from the Greek *thaliktron*, derived from *thallo*, to abound in. This probably refers to the fact that the plants are usually crowded with flowers, insignificant though they are.

Common meadow rue (*T. flavum*, from the Latin *flavus*, golden yellow) is a tall perennial (two to four feet) which exhibits masses of pale-yellow flowers during July and August. The leaves are large and are very like those of the common buttercup. The flowers are borne in dense terminal, erect panicles. Each pale-yellow flower has four or five petaloid sepals, but no actual petals. There are many free stamens and many free carpels.

There are two other British species of *Thalictrum*. *T. minus*, the small meadow rue, grows in rocky places and grows nine inches to two feet high. Its small, graceful leaves are so cut as to be fern-like. The flowers droop in very open racemes. *T. alpinum*, the alpine meadow rue, favours wet mountainous habitats, mainly in Wales and Scotland. It is even smaller, with small, deeply cut, procumbent leaves, and flowers borne in erect racemes four to eight inches high. Each flower droops when fully mature. Both these species bloom during July and August.

Again the willowherb family (ONAGRACEAE, Dicot., p. 287) asserts itself, this time with the tallest of the willowherbs, the great hairy which flourishes along the banks of streams, rivers and lakes. It cannot be missed, for it grows three to five feet high, frequently forming huge masses since it has strong creeping roots.

With many a curve my banks I fret
By many a field and fallow,
And many a fairy foreland set
With willow-weed and mallow.

The Brook: TENNYSON

This species (*Epilobium hirsutum*) is vegetatively very like the rose-bay willowherb (p. 458), though sturdier and taller, with masses of long, narrow, lance-shaped, serrated leaves emerging from the tops to the bottoms of the stems in opposite pairs. They are very hairy. The rose-coloured flowers, which appear during July and August, are borne in smaller, terminal racemes; but each grows on a much longer stalk and



is considerably larger, being a half to three quarters of an inch in diameter. It also differs from the rose-bay flower in being quite regular, that is, there is not the single wide gap between the four heart-shaped petals. The prominent stigma is cleft into four.

In some localities, the great hairy willowherb is known as codlins and cream, which probably comes from a very old name, querdling.

Among other willowherbs which grow along the sides of streams and ditches is the square-stalked willowherb (*E. tetragonum*, from the Greek *tetra*, four, and *gonia*, angle), for the stem is square in cross-section. This, like other willowherbs, is perennial. It grows one to three feet high and has much smaller flowers than the great hairy species. Its stigmas are not cleft.

Small-flowered or hoary willowherb (*E. parviflorum*, from the Latin *parvus*, small or few) is a smaller plant growing one to two feet high. Its small flowers are very like those of the great hairy except for size; even its stigma is cleft into four.

Hemp agrimony, which grows along river-banks and in moist, shaded meadows and damp woods, is a particularly interesting plant, because though it belongs to the COMPOSITAE, Dicot., most of whose members are obvious composites, this plant does not look composite at all. It must not be confused with common agrimony (ROSACEAE, p. 344), though there is little likelihood of this, for the plants are totally different.

Hemp agrimony is the only British representative of the large genus *Eupatorium* which comprises about 450 species, mainly American. This genus was named after Mithridates Eupator, King of Pontus, who is reputed to have discovered its medicinal value. Hemp agrimony (*E. cannabinum*, Latin meaning like *cannabis*, hemp¹) is a perennial which sends up masses of erect shoots two to four feet high. The firm, reddish



Harold Bastin

GREAT HAIRY WILLOWHERB

Inset, inflorescence

¹ *Flowers in Britain*, p. 171.



Harriet Bouslog

HEMP AGRIMONY

stems do not branch except near the top where they bear the inflorescences. The downy leaves, arranged in opposite pairs, are divided into three or five leaflets, two to four inches long, each of which is lance-shaped and pointed with regularly toothed margins.

The inflorescence is vastly different from that of a typical composite capitulum, such as, for example, that of daisy or dandelion. It is made up of a mass of dull purple flower-heads. Though each flower-head looks superficially like a single flower, it is in fact a collection of about five tubular flowers surrounded by about twice as many bracts. Each tubular flower has a long, hairy pappus. The style is very long and deeply cleft into two hairy branches. These flower-heads appear during July to September and sometimes even October.

Hemp agrimony is particularly attractive to butterflies. Its fruit is beautifully plumed.

When purple loosestrife is in bloom there is no risk of overlooking it, for it usually grows along river-banks and sometimes marshes, forming compact clumps with conspicuously brilliant purple flowers. It introduces a new flowering plant family, namely, LYTHRACEAE, Dicot., a not very large family, but one whose species may be found in most parts of the world except in very cold climes. The opportunity now arises for examining the whole family as represented in Britain, for here there are

JULY

only two genera, *Lythrum* and *Peplis*, both containing riverside and marsh plants which bloom during July and August and sometimes September.

Purple loosestrife (*Lythrum salicaria*) is the only fairly common British representative of the genus *Lythrum*, though there is another species, *L. hyssopifolia*, the hyssop-leaved loosestrife which grows in moist places but is very rare. The generic name is from the Greek *lythron*, gore, referring to the colour of the flowers.

The exceedingly handsome purple loosestrife is a perennial which grows two to five feet high, often among reeds and rushes, too near the water to be reached easily (Plate 21).

And oft long purples on the water's brink
Have tempted me to wade, in spite of fate,
To pluck the flowers—oh to look back and think,
What pleasing pains such simple joys create!

The Joys of Youth: J. CLARE

Its tall aerial stems form small clumps which emerge from underground stems. The lance-shaped leaves are borne in opposite pairs. They are like those of willow, hence the specific name and the less common name of willowstrife.

But it is the flowers which are of especial botanical interest. They grow in whorls which form long, bright-purple spike-like inflorescences.

Purple are the spires of the velvet
loosestrife;
On the gliding water lies a purple
stain,
Hour by hour it blushes where
the brimming river rushes,
Rushes gaily, rushes proudly, but
cometh not again.
On a day of deep midsummer
doth the purple loosestrife
Break in clustered blossom, on a
day that poets know,
Over beds of whispering rushes,
where the green dim freshet
gushes,
Where through leagues of level
pastureland the stream winds
slow.

The Loosestrife: A. C. BENSON

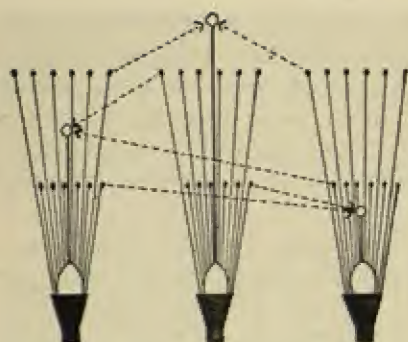
The calyx takes the form of a tube with eight to twelve teeth, every other one being



Harold Bastin

PURPLE LOOSESTRIFE

THE FLORAL YEAR



DIAGRAMMATIC REPRESENTATION
OF CROSS-POLLINATION IN A
PURPLE LOOSESTRIFE FLOWER

large and spreading. The six bright-purple petals are free and spreading out into a circle almost an inch in diameter. There are twelve stamens—six long and six short. The two carpels are fused to form a two-chambered ovary with a common style ending in a disk-like stigma.

There are three forms of flower distinguished from each other by long, intermediate and short styles. This gives a very elaborate means of ensuring cross-pollination, for each form of flower grows on a different plant.

Reference to the diagram herewith will show how cross-pollination is effected. In the long-styled flower, the style projects beyond all twelve stamens. In the intermediate form, the style brings its stigma about half-way between the anthers of the short and the anthers of the long stamens. In the short-styled flower, the style ends below all twelve stamens. Since the visiting insect enters all flowers in the same way and penetrates to the same depth, it follows that : (a) long-styled flowers are pollinated by intermediate- and short-styled flowers only ; (b) intermediate-styled flowers by long- and short-styled ones only ; (c) short-styled flowers by long- and intermediate-styled ones only. This gives eighteen different forms of cross-pollination. We have already seen the dimorphism of primrose flowers (pin-eyed and thrum-eyed, p. 109) ; here we have floral trimorphism.

The fruit of purple loosestrife is a capsule.

The other British genus of the family LYTHRACEAE, Dicot., namely, *Peplis*, is represented by one species only, that is, *P. portula*, the water purslane which also grows along the margins of lakes and ponds, and on river-banks, and displays its very small purple flowers during July and August. But it is quite a different-looking plant from the showy purple loosestrife. It is a humble, creeping aquatic sending out branch shoots three to eight inches long. Usually it is an annual ; but if by chance it becomes submerged in the water then the stems lengthen and the plant becomes perennial.

The generic name is Greek and was at one time applied to a totally different plant, namely, *Euphorbia peplus*. The plant was once supposed to have purgative properties, as indicated by the specific name, *portula*, meaning a little gate (diminutive of *porta*).

The small leaves are borne in opposite pairs. They are ovoid, being blunt and broad at the distal end and narrow near the base. The stem is tinged with red, and if the plant becomes too dry, then the leaves turn red also.

The inconspicuous flowers are borne in axillary positions. The bell-shaped calyx has twelve teeth, the alternate ones being larger than the others. The six minute purple petals may be absent altogether, especially if the plant is submerged; in any event, they soon fall off. There are six stamens. The style is short. Since such an inconspicuous flower, growing under doubtful conditions (sometimes aerial, sometimes submerged), could scarcely be expected to attract insects, the flower pollinates itself by the simple expedient of curving the stamens over towards the stigma.

Purple loosestrife naturally brings to mind the yellow loosestrife (already mentioned on p. 216), for this also grows along river-banks and in watery places and also blooms during July and August. But there the resemblance ends, for yellow loosestrife belongs to a totally different family — that of the primrose (PRIMULACEAE, Dicot., p. 107). We have already met the genus to which it belongs, *Lysimachia*, through the yellow pimpernel (*L. nemorum*, p. 216) and creeping Jenny (*L. nummularia*, p. 386); but yellow loosestrife (*L. vulgaris*) is perhaps the most common of all in the wild state. The old herbal derivation of the generic name is from the Greek *luo*, to loose, and *mache*, strife. Some country-folk tie sprigs of yellow loosestrife under horses' collars to keep irritating flies away. The Romans also did this for both their oxen and their horses, thus preventing irritation and possible consequent strife among the animals.

Yellow Lysimachus, to give sweet rest
To the faint shepherd, killing, where it comes
All busy gnats and every fly that hums.

The Faithful Shepherdess :—BEAUMONT AND FLETCHER

Other authorities derive the name from Lysimachus, either the King of Thrace or the Thracian city of that name. There are about half a dozen British species of this temperate and sub-tropical genus; but, with the exception of the three so far mentioned, they are rare. All three of the common species are cultivated in gardens, and there are several cultivated varieties.

With the exception of floral structure, yellow loosestrife is very different from creeping Jenny and yellow pimpernel for it is an erect perennial growing one to three feet high, frequently forming clumps. The fairly large leaves may be borne in opposite pairs or in whorls of three or four. Each is broad at the base but quickly tapers to a point; the margins are smooth. The leaf-blade is dotted with black.

The flowers may be borne singly or on stalks emerging from the leaf axils, though more often they form attractive, dense pyramidal panicles at the tops of the stems. In each flower there are five sepals forming a tubular calyx with five red-edged teeth. The five yellow petals are united at their bases, but their five oval and pointed lobes spread right out. There are five hairy stamens (*Plate 21*).

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The family SCROPHULARIACEAE, Dicot. (p. 226), is represented along river-banks, etc., by several handsome plants, but none of them is widespread, being of localised distribution only. Perhaps the most common are water speedwell and the water figwort.

Water speedwell belongs to the large genus *Veronica* (*V. anagallis*), and so far as floral structure is concerned it is typical (p. 227). It is a perennial growing one to two feet high with long, fairly narrow, pointed, lance-shaped leaves, having serrated edges and arranged in pairs. The flesh-coloured, pale-mauve or sometimes white flowers are massed in many long, pyramidal racemes which emerge from the leaf-axils towards the tops of the stems. These appear during July to September. This repeated flowering is indicated in the specific name, which is from the Greek *anagallo*, to decorate.

Water figwort or water betony (*Scrophularia aquatica*) is a close relative of knotted figwort (*S. nodosa*, p. 417), also of the family SCROPHULARIACEAE, Dicot. It grows along river-banks and in other wet places, but is a

much taller perennial than the knotted species, attaining a height of anything from two to four feet. The stem has four longitudinal flanges which make it appear square. The leaves are quite devoid of hairs. The greenish-brown flowers, which appear during July to September, are arranged in terminal panicles with no intervening leaves. Each flower is somewhat larger than that of knotted figwort.

A common plant in moist places, the figwort, bears small velvety flowers, much the colour of the red velvet topknot of the gold finch.—*The Open Air*: RICHARD JEFFERIES



Ernest G. Neal

WATER FIGWORT

Two very handsome water-loving members of the family SCROPHULARIACEAE, Dicot., are the monkey-flower and musk; but both are garden escapes. Both belong to the genus *Mimulus*, a name derived from

the Latin *mimus*, mimic, referring to the mask-like corolla. The monkey-flower (*M. langsdorffii*, though some Floras name it *M. luteus*) grows locally in wet ground and along river-banks. It is a native of North America which escaped from cultivation in this country during the middle of the nineteenth century. It is a perennial which grows one to two feet high, with broad, oval, toothed leaves arranged in pairs. Its very large yellow flowers, which appear during July and August, are borne on stalks, which emerge from the axils of the upper leaves. They are quite scentless. The corolla-tube opens out into five large spreading lobes, the two upper ones being slightly smaller than the three lower.

Musk itself (*M. moschatus*) is a smaller perennial growing along river-banks and attaining a height of six to eighteen inches. It is native to many parts of the world; but in Britain it is a garden escape. The flowers of the wild form are usually yellow, but sometimes they are blotched. They appear during July and August, and like those of monkey-flower they are large and impressive. This 'old-fashioned' plant is cultivated, and is a special favourite for potting and growing in cottage windows. There are yellow, red, scarlet and blotched varieties under cultivation. At one time the plant was very popular because of its musky smell (as is indicated by the specific name which is from the Greek *moschos*, musk). Then, during 1919-20, throughout most parts of the world, the plant suddenly lost its scent. The inexplicable phenomenon was the subject of much speculation in the scientific and horticultural press, though no satisfactory solution of the problem was found. In parts, there are signs that the plant is now regaining its seductive perfume.

The rare yellow balsam or touch-me-not (*Impatiens noli-tangere*, BALSAMINACEAE, Dicot.) sometimes, but rarely, occurs in rocky woods (p. 421). Now along river-banks and stream-sides, the orange balsam (*I. biflora*) may be found, but it also is rare. It is a tall perennial (one to three feet) and presents



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MUSK

its orange or yellow flowers, spotted with red, during July to October. The flowers are somewhat smaller than those of the yellow balsam (*Plate 16*).

The two skullcaps, the greater and the lesser, are water-loving plants, the former growing mainly along riversides, the latter mainly in marshy bogs. They are the sole British representatives of the genus *Scutellaria*, a very large widely distributed genus of the mint family (LABIATAE, Dicot., p. 158). All the members of this family which we have so far met (and there has been quite a large number) are fundamentally alike. In fact, the LABIATAE is a very natural family — there is no mistaking it, and the skullcaps are no exception.

Greater skullcap (*S. galericulata*) grows along river-banks and sometimes also in marshes. It is a perennial growing six to eighteen inches high, a fairly slender plant with the usual broad and pointed leaves with serrated edges borne in pairs. The large blue flowers appear during July to September. They are not borne in dense whorls, but in pairs inserted in the axils of the upper leaves. Both flowers of a pair face in the same direction. Sometimes the blue corolla shades down to white at the tube which in this genus is long. The generic name is from the Latin *scutella*, a little cap, referring to the calyx which is cup-shaped. The specific name is from the Latin *galericula*, a skull cap (*Plate 21*).



Harold Bastin

AMPHIBIOUS PERSICARIA

Lesser skullcap (*S. minor*) is not so common. It prefers boggy habitats. It is altogether a smaller though bushier plant growing six to twelve inches high and presenting pink or purple flowers during July to October.

More persicarias and docks, of the family POLYGONACEAE, Dicot. (p. 236), are to be found blooming during July on river-banks and in other wet habitats. We have already met several species of the genus *Polygonum*, including pale or pink persicaria (p. 456), spotted persicaria (p. 465) and bistort (p. 335). Now at least three other species may be found, namely, large persicaria (*P. petecticale*), amphibious or floating persicaria (*P. amphibium*) and biting persicaria or water pepper (*P. hydropiper*).

Large persicaria is a tall species growing one to three feet high in watery places and presenting its spikes of rose-coloured or white flowers during July to October.

Amphibious or floating persicaria or bistort is a variable plant adapting its habit according to its habitat. If growing in moist fields or well up the slopes of the river-bank, then it attains a height of about a foot, with long, narrow, pointed, rough leaves on stalks about half the length of the blades. If growing actually in the water, it attains a height of two to three feet, and the leaves are smooth and broader, and they are borne on very long stalks, especially if floating. The rose-coloured flowers are borne in handsome spikes which appear during July to September.

Biting persicaria or water pepper, though of similar structure fundamentally, so varies from the others that there is no mistaking it. Its erect stem grows one to two feet high. The leaves are narrow and lance-shaped, and the greenish-pink flowers grow in very long, open and dropping spikes which appear during July to October. The juice of this species is very acrid. It is abundant along the edges of ditches and especially where water has been standing for a long time.

The small rose-coloured polygonum raised its head proudly above the water on either hand, and, flowering at this season and in these localities in front of dense fields of the white species which skirted the sides of the stream, its little streak of red looked very rare and precious.—*A Week on the Concord*: THOREAU

The docks, of the genus *Rumex* (p. 350) also of the family POLYGONACEAE, Dicot., are represented along river-sides by the great water dock (*R. hydrolapathum*), a large, robust plant growing anything from three to six feet high. Like all other docks, it is perennial. In general it is like the broad-leaved dock, though the leaves differ in shape. Here they are quite lance-shaped, having no basal lobes, but gradually narrowing down to the stalks and tapering to a point at their distal ends. The reddish-green, small flowers are massed in long tapering spikes made up of whorls with no bracts or leaves between them. The spikes mature during July and August.

The last of the year's stitchworts or chickweeds, of the genus *Stellaria* (CARYOPHYLLACEAE, Dicot.), a genus of otherwise early flowering plants (p. 99), is now blooming in various wet habitats. This is the great chickweed or water stitchwort (*S. aquatica*), the tallest plant in the genus, growing one to three feet high and displaying its typical white flowers during July and August. The five deeply cleft petals are prominent for they are much longer than the sepals. Surmounting the ovoid ovary are five separate styles.

Then our old friend the wallflower family (CRUCIFERAE, Dicot., p. 95) crops up again with a not very common, but interesting representative,

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namely, the woad plant (*Isatis tinctoria*), which grows along river-banks and also in chalk pits. The juice of this plant yields a blue dye which the Ancient Britons are supposed to have used for painting their bodies. The generic name is from the Greek name for the same plant; the specific name is from the Latin *tingo*, to dye.

It is most likely that woad was formerly cultivated for its dye-producing juice, and the wild plants now appearing in Britain are the naturalised remnants of that cultivation. Woad is still cultivated in a few parts, especially Lincolnshire; but its economic value has been much reduced with the advent of indigo and other synthetic dyes. (The dye was extracted by grinding the leaves into a paste and allowing that to ferment.) The genus *Isatis* contains about fifty species native to Mediterranean regions and parts of Asia; but *I. tinctoria* is the only wild British species. The plant is a robust biennial growing one to four feet high. The large, lance-shaped, radical leaves have long stalks and the margins of the blades are slightly serrated; the smooth-edged leaves which grow on the erect flowering-stems are sessile and arrow-shaped with the two basal lobes partially embracing the stem. The small yellow, typically cruciferous, flowers are borne in dense panicles which appear during July to September.

Early in April we met the rush family (JUNCACEAE, Monocot.) through one of the woodrushes of the genus *Luzula* (p. 173). But now we meet the only other British genus, namely *Juncus*, though this is very common. There are about twenty different rushes of this genus to be found in Britain, and most of them begin flowering during July. One of the most frequent is the common rush (*J. conglomeratus*) which grows in all sorts of wet places — marshes, where it forms clumps, or along the sides of sheets of water or even in the water, where it forms more diffuse masses. This species, and others, such as *J. effusus*, the soft rush, are used for making mats and the wicks of candles, hence the generic name which is from the Latin *jungo*, to bind.

The common rush is a perennial growing one to three feet high. Morphologically it is curious. There is a creeping underground stem which sends up long, green, shiny, smooth, cylindrical aerial stems which end in sharp yellowish points. Within these stems there is a continuous pith. The leaves are reduced and form sheaths which surround the bases of the aerial stems.

The dull brownish flowers appear during July and August. They are borne in dense clusters (the specific name, *conglomeratus*, is Latin for rolled together), usually one cluster to each stem, borne a little more than half way up. There is a perianth of six sepaloid segments. Though this species has only three stamens, most others have six. The three carpels are fused to form a three-chambered ovary which is surmounted by one style with three brush-like stigmas, for the flower is wind-pollinated. The fruit is a capsule.

Finally, there is the great or common reed, which must not be confused with the bur-reeds (p. 394) or reed-maces (p. 510), for this plant is a member of the grass family (GRAMINEAE, Monocot., p. 170). The common reed is a very tall and handsome grass growing anything from four to ten feet high. It is the only common member of the genus *Phragmites* (formerly *Arundo*)—a small genus represented by three species, one in Argentina, one in tropical Asia and the third, the common reed (*P. communis*), generally distributed.

The common reed grows along the banks of rivers and ponds and also in marshes. It has long, broad, grass-like leaves and very conspicuous inflorescences which appear during July and August. The inflorescence is a loose panicle, ten to eighteen inches long and dull purple in colour. There are three to five flowers in each spikelet. The lower ones are male only; the upper ones hermaphrodite, partially enclosed in silky hairs. Each flower is typical of a grass flower (p. 171).

Common reed spreads rapidly by means of underground stems; in fact, in some places, such as at the mouth of the River Danube, it forms floating fens.



Harold Bastin

COMMON REED

DITCHES, STREAMS, PONDS AND LAKES

Growing actually in or under or floating on the water of ditches, streams, ponds and lakes are some very important members of the British flora which open out during the month of July. Among them are some well-known Monocotyledons.

There is, for example, the common bulrush. This belongs to the family CYPERACEAE, Monocot., to which the sedges (p. 270) also belong. Common bulrush is not the bulrush in which Moses is supposed to have been discovered by the Egyptian princess (though the Bible calls them flags). The bulrushes that apparently hid Moses belongs to another genus (*Cyperus papyrus*) of the same family. This plant grows in many tropical areas, favouring the banks and edges of rivers and sending up shoots three to



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BULRUSH

twelve feet high. It is especially prolific in the Nile Valley. Its stems and leaves were used for making papyrus. The genus *Cyperus* is represented in Britain by two rare species only.

Common bulrush belongs to the genus *Scirpus* (*S. lacustris*), a cosmopolitan genus of about two hundred species, about fourteen of which are British. The generic name is Latin for reed; the specific name is also from the Latin *lacus*, inhabiting a lake.

Sir Bedivere threw the sword Excalibur in the lake from a bed of bulrushes.

And, leaping down the ridges
lightly, plunged
Among the bulrush-beds, and
clutch'd the sword,
And strongly wheel'd and threw it.

Morte d'Arthur: TENNYSON

The bulrush is a perennial growing one to seven feet high, and has short, thick underground stems which penetrate the water-logged soil of the edges of ponds and lakes and sometimes even marshes. The tall, erect, cylindrical stem has a spongy pith. The leaves are reduced to sheaths which enclosed the bases of the aerial stems.

The hermaphrodite flowers appear during July and August. They are borne in many-flowered, long-stalked spikelets, which together form panicles at the ends of the stems. Each flower has six perianth segments which are reduced to insignificant bristles, three stamens and a long style which ends in three long, thin and pointed stigmas.

A new family, TYPHACEAE, Monocot., now makes its appearance. It is closely related to the family of bur-reeds (SPARGANIACEAE, Monocot., p. 394) which in some Floras is absorbed into the former. TYPHACEAE comprises aquatic herbs of temperate and tropical climes. There is only one genus, *Typha*, and to this the reed-maces belong. There are two British species, *T. latifolia*, the great reed-mace, and *T. angustifolia*, the narrow-leaved reed-mace. Apart from the shape of the leaves, there is very little difference between these two species, for both are striking plants, perennial, and attaining a height of three to seven feet in streams and pools and along the banks of rivers, the lower parts of the plants usually being submerged.

Reed-mace is sometimes referred to as reed-mace bulrush and sometimes simply bulrush, which is confusing for it is not a bulrush at all (p. 510).

Reed-mace sends up sword-shaped leaves three to six feet long. The conspicuous inflorescences appear during July and August. They are long and cylindrical, being borne at the ends of tall, erect stems. The lower part of the inflorescence is thick, cylindrical and brown and is composed of female flowers only. The thinner upper part is curved and yellowish in colour; this comprises the male flowers. The whole effect of this striking inflorescence has inspired the alternative common names of black poker and cat's tail. The generic name, *Typha*, may be derived from the Greek *typhos*, fen, for that is where the plants frequently grow, or it may be derived from the Greek *typhe*, cat's tail.

The female flower is very simple, being composed of a single carpel surrounded by brown hairs. There is a long style with a hairy stigma, for the flower is wind-pollinated. The male flower has usually three, sometimes six, stamens and these are surrounded by a few silky hairs. The fruit is an achene to which the hairs of the female flower remain attached and thus aid air dispersal.

The handsome inflorescences of reed-mace are sometimes used for household decoration. Once upon a time the stalks and leaves were used for making coarse matting.

A favourite plant among gardeners and park-keepers who are fortunate enough to have an ornamental pool, small or large, is the arrow-head; but this plant is indigenous to Britain and is not uncommon, growing in ditches and shallow water. In fact it is a very tough and hardy plant, so it can be cultivated with ease. It is interesting to note that writing of this plant in 1851, the Rev. C. A. Johns says: "This is one of the very few plants which neither smoke nor buildings have driven out of London, there being still large beds of it in the Thames, near



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GREAT REED-MACE

Inset, fruits ripening and ready for dispersal

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the Temple Gardens and Hungerford Market, where the eager botanist may even yet gather fine specimens". The eager botanist would have to follow the Thames Valley farther out of London these days to find arrow-head.

Arrow-head is a member of the small family ALISMATACEAE, MONOCOT., to which the water plantain (*Alisma plantago*) also belongs (p. 396). The former is the only indigenous British member of the other genus of the family, mainly a North American one, namely *Sagittaria*. Arrow-head (*S. sagittifolia*) is a handsome perennial which grows in shallow water, mainly ditches, sending up aerial shoots six to eighteen inches high. It spreads vegetatively beneath the mud by means of thick, underground stems and hibernates during the winter by means of winter buds.

One can well imagine the shape of the leaves, for all three names — common, generic and specific — indicate it (from the Latin *sagitta*, arrow). The arrow shape is more distinct here than in most so-called arrow-shaped leaves, for the blade is divided into three triangular lobes, the central being only slightly larger than the distinct, backwardly pointing lateral lobes. On rare occasions, one or even two other leaf-forms may be seen. If the leaves are completely submerged all the time they may be ribbon-shaped; if their blades are floating then they may be oval.

The beautiful, flesh-coloured or white flowers are typically monocotyledonous. They are borne in stiff racemes at the ends of erect



ARROW-HEAD IN FLOWER

Ernest G. Neal

Frogbit and duckweed are also present

flowering stalks, each whorl of the raceme being made up of three flowers. These appear during July and August. They are unisexual, but both male and female flowers grow on the same plant. Each flower has three sepals and three large, spreading petals, white or flesh-coloured with a purple patch at the base. This corolla may be a half to one inch across. In the male flower there are numerous free stamens; in the female, numerous free carpels. The fruit is an almost spherical collection of nuts.

An entirely aquatic monocotyledonous family is the HYDROCHARITACEAE, a fairly large family of tropical and temperate plants, most of which prefer fresh water, though there are a few marine genera. In Britain, however, the three representative genera contain nothing but fresh-water plants. Of these one grows erect in the water and sends up aerial shoots, another floats freely on the surface of the water, and the third is mainly submerged though some of its shoots sometimes float. Each genus is represented in Britain by one species.

The genus *Stratiotes* contains only one species in any event. This is *S. aloides*, the water soldier, a perennial plant confined mainly to still waters in the eastern parts of England. When not flowering, the plant is rooted in the mud and sends up tufts of strong leaves shaped like swords and radiating from a central stem like leaves of the aloe. Unlike most monocotyledonous leaves, the edges are serrated. The shape of the leaves have earned the plant its common name. Older names for this plant are knightsword, crab's claw and winter sengreen (from the Old English *singrène*, evergreen). Both generic and specific names also indicate the character of the leaves, the generic name being from the Greek for soldier and the specific name coming from the Greek *aloe-eidos*, with leaves like that of aloe.

The plant sends out short runners, thick enough to resemble offsets (p. 476), from the ends of which new plants arise.

During July (sometimes earlier), when about to bloom, the plant rises to the surface of the water and floats. After the flowering season is over, that is, towards the end of August, the plant sinks to the bottom again. The flower-stalks are about six inches long. Towards the tip of the flower-stalk there are two sheaths. These enclose either several male flowers or only one female. Both male and female flowers



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WATER SOLDIER

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are white and almost an inch and a half across. The sexes grow on different plants. There are three sepals and three large white petals. In the male flower there are many stamens, but only about a dozen at the centre are fertile. In the female flower there is a six-chambered ovary surmounted by six stigmas.

The next British genus in the family HYDROCHARITACEAE, Monocot., is *Hydrocharis* itself. This is represented by the freely floating *H. morsuranae*, the frogbit. It is an elegant plant, as indicated by the generic name, which is from the Greek *hydor*, water, and *charis*, grace or elegance. The specific name reflects the common one; it is from the Latin *morsus*, a bite, and *rana*, frog.

Frogbit is perennial, though it is not very common. It sends long roots down into the water from creeping but floating stems. From these stems the leaves emerge in small groups. Each leaf has a fairly long stalk and almost round, floating blades about an inch and a half in diameter. The plant reproduces itself vegetatively and incidentally hibernates by means of winter buds — large buds which form on the stems and then during the autumn break away and sink to the bottom, where they lie dormant during the winter and then rise to the surface and develop during the spring. The main plant also spreads vegetatively by means of branch stems, from the tips of which fresh plants are formed.

The flowers are borne during July and August on erect stems above the surface of the water. Two or three stems emerge from two pellucid sheaths. The flowers are unisexual and the sexes appear on different plants. In each flower there are three narrow green sepals and three broadly oval, white, spreading petals. The male flower has nine to twelve stamens, and the female six fused carpels surmounted by six radiating styles, each ending in a pronounced cleft stigma.

The third genus of the family HYDROCHARITACEAE, Monocot., to be found in Britain is *Elodea*. This is an entirely North American genus, but the species *E. canadensis*, the Canadian water weed or thyme, is now, alas, too much in evidence in this country. It is a submerged or floating plant which grows in fresh water in most parts of the country. The generic name is from the Greek *helodes*, marshy; though this does not describe the plant's habitat very accurately.

Elodea has much-branched stems covered with small, lance-shaped leaves which are borne in opposite pairs or in whorls of three or four. Its flowers are unisexual, but in this country the plant depends solely on its all-too-effective method of vegetative reproduction, for here male flowers are unknown. The female flowers have a perianth of six greenish-purple segments.

The plant sends out roots at the joints of the stems. Any small part of the plant, if broken off, and subjected to suitable conditions, will



develop into a new plant. So prolific is it in this kind of growth that once *Elodea* establishes itself in a lake or other sheet of fresh water, it might well choke it out of existence unless there is a periodic clearing-out. That is why the plant is such a nuisance to water engineers. The great rate at which *Elodea* is able thus to reproduce itself can be gauged from the fact that it was quite unknown in Britain before 1841. Now it is one of the most common water plants in England, Wales, Scotland and Ireland. It was introduced in a mysterious fashion from North America into Co. Down, Ireland, in 1836, and then into England in 1841.



Harold Bastin

CANADIAN WATER WEED

In an aquarium

Among dicotyledonous aquatics which grow erect in watery places but have their main shoots above water are the water dropworts (*Oenanthe* species, p. 408) of the family UMBELLIFERAE, Dicot. There are two late summer water-loving species — *O. fistulosa* and *O. aquatica* (*phellandrium*).

O. fistulosa is fairly common. It is a biennial growing one to three feet high and displaying its compound umbels of white flowers during July to September. It is not unlike hemlock water dropwort (p. 495) but cannot be mistaken for it. For example, it grows in much more water-logged habitats and its lower leaves are submerged. The leaflets of these are flattened. But all the aerial parts — stems, stalks of umbels, leaves and leaflets — are thick and tubular (the plant is sometimes called tubular water dropwort). The umbels are not so large as those of hemlock water dropwort.

O. aquatica (*phellandrium*) prefers the water of peaty areas. It, too, is a biennial attaining a height of one to four feet and displaying its compound umbels of white flowers during July to September. Its leaves are very finely divided (the plant is sometimes called fine-leaved water dropwort).

A very rare aquatic, confined to mountain lakes, especially those of the Lake District of the north of England, is the water lobelia (*Lobelia*

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dortmanna) of the small family LOBELIACEAE, Dicot., a family distributed mainly over tropical and sub-tropical lands. (In some Floras the genus *Lobelia* is included in the family CAMPANULACEAE, and the separate family LOBELIACEAE is not recognised.) Both generic and specific names of the water lobelia are named after Flemish herbalists and apothecaries: the generic name is after the sixteenth-century herbalist Matthias Lobelius, and the specific name after the eighteenth-century apothecary Dortmann.

The wild water lobelia is not such a compact plant as most of the familiar garden species and varieties are. It is a perennial which forms mats of leaves at the bottom of the water near the edges of the lakes. From a central disk-like stem, simple but long leaves radiate. The flowering-stalks are almost leafless. They grow twelve to eighteen inches above the water, appearing during July and August, and presenting pale-blue flowers in very open racemes.

The flower is irregular since the petals are united only at their bases and then open out into five unequal lobes. The two upper ones are small and upright. The two lateral ones are broader; then there is a rather smaller lower lobe. The five stamens have five free filaments, but their anther heads are united in the form of a tube around the style.

There is an even rarer British species of *Lobelia*, namely *L. urens*, the acrid lobelia confined to a very few heaths in south-west England. Its clustered flowers are of a deeper blue, or even purple, and they do not usually emerge until August to September.

Farther out into the depths of the stream, river, pond or lake some of our most showy aquatic plants are now in full bloom. Many of the different forms of water crowfoot, which, for lack of space, we have included under the general species of *Ranunculus aquaticus* (RANUNCULACEAE, Dicot., p. 273), are still in bloom and others are beginning to flower. These vary mainly in their leaf-forms according to whether they are floating or submerged, in brackish or in fresh water, or subjected to strong currents or resting peacefully in still pools. The botanist who is keen on the subdivision of the different forms of this plant must study a Flora which gives their details (though not all students of the species are agreed about them). Search can be made, however, for such species as *R. heterophyllus*, *R. hederaceus*, *R. tripartitus*, *R. peltatus*, *R. circinatus* and *R. fluitans*. Their specific names disclose their peculiar and diagnostic features.

But now, at the height of summer, our minds inevitably turn to those peaceful spots which give hospitality to the water lilies, for now they are certain to be blooming, though often their flowers appear during June if the weather is warm. This certainly applies to the cultivated forms.

If we accept the name lily as applying strictly to members of the lily family (LILIACEAE, Monocot.), then water lily is a misnomer, for water lilies are not only *not* members of the lily family, but they are very far

removed from that family. They are comparatively simple Dicotyledons not far removed from the buttercup family (RANUNCULACEAE). But then the name lily is applied to many flowering plants which are not members of the lily family.

Water lilies belong to the family NYMPHAEACEAE, Dicot. — a not very large family (containing about eight genera), but one which is very cosmopolitan in distribution. The genus *Nelumbium*, for example, which contains the lovely lotus flower, can be found growing prolifically in parts of both American continents, in most parts of tropical and sub-tropical Asia and in Australia. *N. speciosum* is the famous sacred lotus. The genus *Victoria* contains the Victoria water lily (*V. regia*) of the Amazon. This has enormous floating leaves large and strong enough to support a baby. Flooding of the upper surface of the leaf is prevented by a vertically growing margin two to three inches high. Now is the time to visit the Royal Botanic Gardens, Kew, where handsome specimens of this extraordinary plant are usually on view.¹

Two genera of the water lily family, namely *Nymphaea* and *Nuphar*, are indigenous to Britain. In ornamental aquatic gardening the genus *Nymphaea* is a particular favourite, giving water lilies of white, cream, pink, vermilion, lilac and shaded hues.

¹ *Flowers in Britain*, p. 50.



Harold Bastin

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Nymphaea contains the wild white water lily, and *Nuphar* the yellow. Both grow in the limpid water of lakes and ponds and also in slowly moving rivers and canals. Their leaves are large and leathery, the floating blades being almost circular in shape. The leaf-stalks are very long and thus enable the blades to rise and fall with the level of the water. Both plants spread by means of thick horizontal stems at the bottom of the water or even buried in the mud.

The winding streamlet, limpid, lingering, slow,
Where the reeds whisper when the zephyrs blow;
Where in the midst, upon her throne of green,
Sits the large lily as the water's queen.

The Borough: G. CRABBE

The white water lily (*Nymphaea alba*) is a perennial which blooms during July and August, sometimes even earlier. The pretty generic name is from the Greek *nymphaios*, which means of the nymphs, for this flower used to grow in places supposed to be haunted by nymphs. It is the only British wild member of the genus, yet its flowers are perhaps the finest of all in our indigenous flora. The handsome flowers float on the surface among the green leaves.



WHITE WATER LILY

Eric Hosking

JULY

And floating water-lilies, broad and bright,
Which lit the oak which overhung the hedge
With moonlight beams of their own watery light.

SHELLEY

The flower is very sensitive to light, closing its petals during inclement weather and during the night. After fertilisation and while the fruit is forming it actually sinks beneath the surface of the water. Morphologically it is very simple yet interesting. There is an outside whorl of four green sepals. Inside this is a large number of petals arranged in a definite sequence. The outside whorl consists of four which alternate with the sepals. Inside this whorl is a second whorl which alternates with the outermost. Then each of these eight petals forms a starting-point for a spiral of petals growing from a long receptacle. As we pass inwards the petals gradually merge into stamens. Such transitional forms, partly petal and partly stamen, are not uncommon among flowering plants. The true stamens are numerous, ranging from fifty to a hundred. The carpels are also numerous and they are usually embedded in the receptacle and fused with each other to form an ovary divided into ten to twenty chambers, each of which contains numerous seeds. The stigmas of these fused carpels have no styles but radiate outwards like the spokes of a wheel.

The fruit of the white water lily shows remarkable adaptation for dispersal by water. It is a large berry which ripens under water. When ripe, the berry splits to release a mass of seeds which rises to the surface of the water. Each seed is covered with a spongy mass of tissue called an aril, and this contains many air bubbles which render the seed buoyant and capable of floating long distances in the water. Finally the air bubbles gradually disappear and then the seed sinks to the bottom where it eventually germinates.

The yellow water lily (*Nuphar lutea*), a perennial, is probably more common than the white, especially in the eastern parts of England. It is the only British wild representative of a genus whose name is from the Arabic *naufar*, the name of this flower. Though the flowers are at their best during July and August, they often appear in June if the weather is good.

Now will the water-lilies stain the lake
With cups of yellow, chalices of cream,
Set in their saucer leaves of olive-green
On greener water, motionless, opaque.

The Garden: V. SACKVILLE-WEST

The flowers of yellow water lily smell like brandy; that is why in some localities they are called brandy bottles. Unlike those of the white water lily, they do not float on the surface of the water but are raised on thick stalks some few inches above it.

Each flower is much smaller than that of the white water lily. There is a cup of five large, yellow sepals enclosing about a dozen much smaller

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yellow petals arranged spirally on a thick receptacle. The stamens are numerous and the ovary is similar to that of the white water lily. The fruit, a large berry, eventually breaks away from its stalk and splits into several parts. The seed has no aril like that of the white water lily, but the slimy outer wall contains air bubbles. These enable the seeds to float in the water until the outer coat decays.

This brings us to the end of our examination of the fresh and brackish water July flora of Britain. Though we have dealt with it by no means exhaustively, it is quite clear that at this time of year this kind of flora is most prolific. This is not surprising since marshes, rivers, ponds, etc., where water abounds, form an environment whose temperature is lower than that of such habitats as, say, woods and pastures. The result is that an aquatic and semi-aquatic flora takes longer to develop and increases mainly with increase in temperature.

OTHER MOISTURE-LOVING, SEMI-AQUATIC AND AQUATIC PLANTS WHICH MAY APPEAR IN BLOOM DURING JULY

(The number following each flower is the page on which it is mentioned or described)

Arrow-grass, Marsh, 387	Iris, Wild, 392
Avens, Water, 287	Lousewort, Marsh, 266
Bitter-cress, Hairy, 186	Mare's tail, 397
Bladderwort, 399	Meadowsweet, 385
Bogbean, 266	Milfoil, Water, 398
Brooklime, 271	Moneywort, 386
Buckbean, 266	Monk's hood, 390
Bur-reed, Branched, 394	Myrtle, Bog, 389
Bur-reed, Unbranched, 394	Pearlwort, Proculumbent, 264
Buttercup, Celery-leaved, 263	Pennyroyal, Marsh, 158
Butterwort, 268	Pimpernel, Bastard, 386
Chaffweed, 386	Plantain, Water, 396
Chickweed, Water, 175	Pondweeds, 401
Clover, Strawberry, 438	Ragged robin, 186
Comfrey, 272	Red-rattle, Marsh, 266
Cotton-grass, Common, 49	Rocket, Yellow, 265
Creeping Jenny, 386	Rush, Flowering, 396
Cress, Water, 397	Salsify, 263
Cress, Yellow winter, 265	Scorpion grass, Tufted, 390
Crowfoot, Water, 273	Sedge, Common, 270
Duckweed, 402	Sedge, Sweet, 393
Flag, Sweet, 393	Shoreweed, 391
Flag, Yellow, 392	Spearwort, Greater, 387
Forget-me-not, 389	Starwort, Water, 187
Gale, Sweet, 388	Stitchwort, Bog, 266
Gipsywort, 386	Stitchwort, Marsh, 265
Grass, Reed meadow, 264	Trefoil, Marsh, 266
Grass, Tall fescue, 322	Violet, Water, 274
Hornwort, 399	White-rot, Common, 265

COASTAL AREAS

LIKE fresh and brackish water associations, the various marine associations are at their floral best during this time — the height of summer. Many of the maritime plants of May and June are still blooming; but there are some new ones too, and some of them are of exceptional interest.

CLIFFS AND ROCKS

On maritime cliffs and rocks the tall, handsome tree-mallow grows, though it is not particularly common. It is a member of the mallow family (MALVACEAE, Dicot., p. 348); but it is not included in the genus *Malva* to which the common mallow belongs, for it is sufficiently different to warrant inclusion in another genus, namely, *Lavatera*. This genus comprises about twenty species mainly of Mediterranean, Asiatic and Australian distribution. Apart from another even rarer species (*L. sylvestris*), the tree-mallow (*L. arborea*) is the only British wild representative, though some others, especially *L. rosea*, are often grown in herbaceous borders. The genus was named after J. K. Lavater, the eighteenth-century Swiss naturalist.

Tree-mallow is a perennial which grows from six to eight feet high and consequently has a fairly thick stem. Fundamentally it resembles common mallow (p. 348). Its leaves are similar, being soft and downy, with seven serrated lobes. The large purple flowers, which appear during July to October, are



TREE-MALLOW

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Eric J. Hosking

TAMARISK

massed at the ends of the branches. Each is very like common mallow though a little smaller, with somewhat broader petals which become deeper towards the centre. The curious arrangement of the stamens and carpels, and the structure of the fruit are similar.

DUNES

On the sand dunes of maritime regions in the south-west (and on occasions in the south-east) the bushy tamarisk may be seen. Though this curious yet attractive plant thrives best on sand dunes, it also grows inland but only in the south and invariably under cultivation, for it is a delicate plant. Tamarisk is native to Europe, western and south-western Asia and also Japan where in parts it assumes the habit of a small tree. But in Britain it is never anything but a bush ten to twelve feet high.

Tamarisk belongs to the family TAMARICACEAE, Dicot., and it is the sole British representative of the family. It is included in the genus *Tamarix*. The name was given it after the River Tamaris in Spain where the plant abounds. In fact, tamarisk flourishes in Spain, North Africa and France. It has been suggested that the plant was brought to Britain by smugglers more than three hundred years ago. Its Spanish home is

reflected in the generic name, and its French home in the specific name — *T. gallica* (from the Latin for native of Gaul). Indeed the species which grows wild in Britain is often called French tamarisk (*T. gallica*), for under cultivation here there are also the Chinese species (*T. chinensis*) and the Caucasian species (*T. tetrandia*). Also under cultivation are several varieties of the French such as *T. gallica* var. *hispida aestivalis* with carmine-pink plumes of flowers and *T. gallica* var. *parviflora* having crimson flowers. Another species, *T. gallica* var. *mannifera* grows in all countries from Egypt to Afghanistan. It exudes a white, honey-like secretion when punctured. This edible substance is the manna of the bedouins; it is not the manna of the Israelites.

French tamarisk has many, almost tufted, branches, covered with blue-green leaves, which are so reduced in size that their evaporating surfaces are reduced near to the minimum — a valuable asset to a plant so exposed to high winds. The leaves are arranged on the stems in spirals: in the younger stems they overlap each other; on the older stems they are spaced out. Though mainly deciduous, some remain on the plant throughout the winter.

The flowers render tamarisk very conspicuous during July to September. They are very small but are massed into long, rose-pink spikes which grow so closely together as to give a plumed effect. Each flower has four to six small sepals; the same number of pink petals, much larger than the sepals; either the same number of, or twice as many, stamens; and an ovary composed of usually three fused carpels with three short styles. The fruit is a capsule which has a tuft of hairs at one end.

But it contents me to see nothing more
Than liquid blue of the invisible wind
Flowing and glowing through the tamarisk
That waves upon this wild deserted bank;
And I lie warm on the short, sandy turf
Lulled in bright noise of the returning sea.
O plummy Tamarisk, tossing your green hair
In the wind's radiant stream, as if I had lent
Your fibres all my senses of delight. . . .

The Tamarisk Hedge: LAURENCE BINYON

SALT MARSHES

On salt marshes are several grasses (GRAMINEAE, Monocot., p. 170) peculiar to such a habitat. Among these is the sea meadow grass of the genus *Glyceria* (*G. maritima*) — a perennial with creeping stolons which send up aerial shoots six to fifteen inches high. The flower spikelets are arranged in erect panicles.

But the most interesting of the maritime grasses is the rice or cord grass, *Spartina townsendii*, which is a hybrid of two other species, *S. alterniflora* and *S. stricta*, all three species of which grow on salt mud flats mainly

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along the south coast of England. The generic name is from the Greek *spartion*, a diminutive of *spartos*, a cordage plant. The interesting *S. townsendii* was named after the British botanist F. Townsend (1822-1905).

Spartina townsendii is morphologically a fairly typical grass growing two to four feet high with its flowers arranged in erect spikes. This plant spreads prolifically by means of underground stems. It is still spreading in many parts of the south coast, especially around Southampton and Poole. So profusely does it grow that, gradually encroaching upon the sea itself, it has been known to choke harbours. But in some places this habit has been put to good account. It was introduced into Holland, for example, in 1924, and since then it has spread so rapidly and effectively that what were once salt marshes or actual sea are now dry fields which are adapted to all sorts of agricultural pursuits. In this respect, *Spartina townsendii* is a dual-purpose plant, for it also makes good fodder.

Then there are the seaside club-rushes of the sedge and bulrush family (CYPERACEAE, Monocot., p. 270). These are included in the bulrush genus, *Scirpus* (p. 510). There are two seaside species — *S. maritimus* and *S. rufus*. The former is the commoner. It is very like the bulrush, though it grows only one to three feet high and its panicles of spikelets are not so diffuse. They appear during July and August.

Wild celery (sometimes called smallage) also grows in salt marshes. It is one of about four British species of the genus *Apium*, a typical genus of the family UMBELLIFERAE, Dicot. (p. 165); but apart from wild celery (*A. graveolens*) the species are very rare, though even wild celery is not common. From it the cultivated form has been derived. The generic name is from the Greek term which is applied to several umbellifers; the specific name refers to the rank smell which emanates from this plant (Latin *gravis*, heavy, and *oleo*, to smell).

Wild celery is a biennial growing one to three feet high and is very similar to cultivated celery, though the stalks of the radical leaves are not large and fleshy, and of course they are not white. They are not so finely divided as are those of many other umbellifers. The greenish-white flowers grow in typical terminal and axillary compound umbels which appear during July and August. There are no bracts to the umbels.

SEASHORE

On the seashore itself we may now hope to find some particularly interesting flowers.

Among them is the showy, yellow horned poppy with its bright yellow flowers and glaucous foliage. Though a member of the poppy family (PAPAVERACEAE, Dicot., p. 261), it does not belong to the same genus (*Papaver*) as the common red poppy does (p. 357). It is a member of

the genus *Glaucium* which derives its name from the Greek *glaukos*, blue grey, the colour of the foliage. There are two British species, *G. flavum*, the yellow horned poppy, and *G. corniculatum*, the scarlet horned poppy, but the latter is very rare indeed.

The yellow horned poppy is common on our sandy seashores; it never grows inland. It is a biennial which grows one to two feet high. The radical leaves are long and deeply lobed, the lobes getting larger towards the distal end and having bluntly toothed margins. The cauline leaves have very wavy margins and the lower parts of the blades embrace the stem. The glaucous colour of the foliage is due to the presence of a layer of wax — a common character in maritime plants, for it prevents excess loss of precious fresh water from the leaves (*Plate 22*).

The flowers appear during July to September, though sometimes they open out in June. Apart from the fact that the sepals are not hairy, the petals are yellow, and the stigma two-lobed, the flower is similar in structure to the common poppy (p. 357). But the fruit is quite different. Here it takes the form of a long pod which looks like a horn six to twelve inches long. Inside are two longitudinal chambers which contain the seeds.



Ernest G. Neal

YELLOW HORNED POPPY
Showing fruits and flowers

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A poppy grows upon the shore,
Bursts her twin cup in summer late;
Her leaves are glaucous-green and hoar,
Her petals yellow, delicate.

She has no lovers like the red,
That dances with the noble corn:
Her blossoms on the waves are shed,
Where she stands shivering and forlorn.

Shorter Poems: R. BRIDGES

The sea holly is the strangest of all umbelliferous plants (UMBELLIFERAE, Dicot., p. 165), for superficially it does not resemble any of the other members of the family. It thrives on the seashore, mainly in sandy places. It is the only common British member of the genus *Eryngium* (*E. maritimum*). Sometimes it is called eryngo. There is another very rare species, *E. campestris*, of waste places and fields, called field eryngo. Other more local names for sea holly are sea hulver and sea holm (see also holly, p. 200). The generic name may be from the Greek *eryngos*, a plant used for treating flatulence, but there is some doubt about this.

Sea holly is a biennial growing one to two feet high. The radical leaves are very large and almost round but their margins are tough and spiny. The leaves on the stems are more or less palmately lobed, also with tough spiny margins. Thus they appear something like holly leaves, hence the common name, though this plant bears no botanical



SEA HOLLY

Harold Baitin

relation to true holly. Moreover, the leaves are covered with a waxy bloom giving them a glaucous appearance (*Plate 22*).

The pale-blue flowers are borne in inflorescences which look more like those of teasel (p. 541) than those of any umbellifer. These appear during July and August. Each umbel is subtended at its base by four to eight prickly bracts which resemble small foliage leaves. Actually the dense, almost conical, head has achieved its structure by the suppression of the floral stalks of what would otherwise be a simple umbel. The calyx of the flower is composed of sharp teeth longer than the pale-blue deeply notched petals.

At one time the long, fleshy roots of sea holly were candied and eaten as a sweetmeat — the kissing comfits of Elizabethan days. In those days too the plant was supposed to possess the power of ensuring fidelity, though it is difficult to see in what way.

Another striking plant of the seashore and sometimes even of salt marshes is the sea lavender, which is not in any way related to the sweet-smelling garden lavender. It belongs to the family PLUMBAGINACEAE, Dicot. (p. 188), to which thrift, a much earlier seashore plant, also belongs.

Sea lavender is a member of the genus *Statice*, a well-known cultivated genus. It is *S. limonium*, the generic name coming from the Greek *statikos*, causing to stand, because the plant is supposed to stop the flow of blood, and the specific name being derived from the Greek *leimonion*, which is the name of this plant. There are about half a dozen species of sea lavender in Britain, but *S. limonium* is the only common one (*Plate 22*).

Sea lavender is a perennial which sends up flowering shoots four to six inches high during July and August. All the leaves are radical. They are much broader than those of thrift, being narrow at the base then broadening at the distal end and suddenly narrowing down to a pointed apex.

The inflorescence of purple flowers is quite different from that of thrift. The flowering stalks are repeatedly branched and these bear panicles of small flowers, all of them arranged along the upper surfaces only of the branches. (This character is well brought out in cultivated species of *Statice*.) The small scentless flower is similar in structure to that of thrift. There is a five-cleft calyx tube; five petals united at their bases only; five stamens; and five carpels united to form a single-chambered ovary with five free styles. As in the primrose, there are pin-eyed and thrum-eyed flowers, the stamens of the thrum-eyed form being very conspicuous. In fact, PLUMBAGINACEAE is closely related to PRIMULACEAE.

Here on its wiry stem in rigid bloom
Grows the salt lavender that lacks perfume.

Tales of the Hall: G. CRABBE

Sea scabious may be found growing on the sandy seashore in bloom during July and August, though it is rare, being confined mainly to Jersey. It is a member of the scabious genus (*Scabiosa*, *S. maritima*, p. 329) of the

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family DIPSACACEAE, Dicot. It is very like the other members of the genus, but smaller, being an annual which grows nine to eighteen inches high with heads of purple flowers.

The seaside sandwort spurrey is quite common on the seashore though it is not a striking plant. It belongs to the pink family (CARYOPHYLLACEAE, Dicot., p. 99) and is included in the genus *Spergularia*. Though some botanists split the seaside forms of this plant usually into three species, it is sufficient here to recognise one — *S. maritima*. The small plant has prostrate stems bearing minute, semi-cylindrical leaves. The small pink flowers appear during July to September. Each has five small sepals, five larger petals, ten stamens and usually three styles.

Finally there is the saltwort or prickly saltwort which grows on the sandy seashore. It belongs to the beet family (CHENOPODIACEA, Dicot., p. 351), a family which contains several maritime species of plants such as orache and purslane (p. 275), glasswort (p. 550), and sea beet itself (p. 409). Saltwort is the only British representative of the genus *Salsola*, a cosmopolitan genus of plants of maritime and salt steppe habitats. The generic name is a diminutive of the Latin *salsus*, growing on salt marshes, though the species under consideration (*S. kali*, for the Arabic, *kalah*, salt) prefers the sandy seashore.

Saltwort is a prostrate annual which flowers during July and August. The entire plant contains much salt, hence its name. Its many-branched stems grow six to eighteen inches long and bear small, succulent, awl-shaped leaves which end in a sharp point and have a fringe of small prickles on their margins. These leaves usually emerge in threes, and in their axils the tiny, almost colourless flowers grow. Each is subtended by a bract and has a five-cleft perianth, five stamens and two stigmas.

OTHER FLOWERS WHICH MAY APPEAR IN COASTAL AREAS DURING JULY

(The number following each flower is the page on which it is mentioned or described)

Asparagus, Wild, 406	Hound's tongue, Common, 407
Beet, Sea, 409	Pearlwort, Sea, 264
Bindweed, Seaside, 409	Pink, Sea, 188
Bugloss, Viper's, 349	Plantain, Buck's horn, 406
Cabbage, Wild (Sea), 405	Plantain, Sea, 407
Campion, Sea, 408	Purslane, Sea, 275
Crane's bill, Stinking, 224	Roseroot, 381
Cress, Hoary rock, 406	Samphire, 404
Dropwort, Parsley, 407	Scurvy-grass, 275
Eel-grass, 410	Thrift, 188
Grass, Marram, 407	Trefoil, Soft-knotted, 406
Henbane, 352	Whitlow grass, Twisted, 405
Herb, Robert, 224	Wrack, Grass, 410

PART IX

AUGUST

IN the old Roman calendar, August was the sixth month, *Sextilis*, which followed *Quintilis* (p. 411). But when the month of July was named after Julius Caesar it was decided to name the following month after his successor Octavius, who in due course assumed the name of Augustus. The Old English name was *Arn Monath* and *Barne Monath*, the former referring to the harvest and the latter to the barns in which the harvest was stored.

By now, the floral season is showing signs of declining; though a few plants begin blooming for the first time. Many wild fruits are now ripe, and even some edible fruits, such as whortleberries (p. 579), though there are yet not enough of them to warrant gathering.

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WOODS, FIELDS AND MEADOWS

WOODS

IN woods, and even in meadows under solitary trees, the rare wild cyclamen might be found. This lovely plant is a member of the primrose family (PRIMULACEAE, Dicot., p. 107), though it does not resemble the primrose, at any rate on superficial observation. It belongs to the genus *Cyclamen*, a European, mainly alpine, genus. The name is from the Greek *kyklos*, but what the significance is seems doubtful, though the name might refer to the discoid tubers or to the coiling of the stem after fertilisation.

The only wild cyclamen to be found in Britain is *C. europaeum*, and even this is most probably not a native. It is sometimes also known as sowbread. But it is very like the handsome plants so familiar to us as potted ornamentals, but smaller than the majority of these. Some species grown in rock gardens, however, are even smaller.

Wild cyclamen is a perennial which grows four to eight inches high, with leaves almost as beautiful as the pink flowers, the latter of which appear during August and September.

There is a large, bun-shaped root tuber from which the roots



WILD CYCLAMEN

Inset, flower in section

arise on the lower surface and shoots on the upper. The leaves are beautifully blotched or variegated. Each leaf is heart-shaped or somewhat lobed and the margins are well serrated. Each blade is borne on a long, graceful, greenish-red stalk. So also are the flowers. Each flower is pendulous at the head. The calyx is bell-shaped, but the margin is deeply cleft into five lobes. The most diagnostic feature of the flower, however, is the five large petals, pink, beautifully wavy and completely reflexed which have been so picturesquely described as follows :

Cyclamens, ruddy-muzzled
cyclamens

In little bunches like bunches of
wild hares

Muzzles together, ears aprick,
Whispering witchcraft. . . .

D. H. LAWRENCE

There are five stamens and a single-chambered ovary with one style. The fruit is a capsule opening with five teeth.

Like such plants as ivy-leaved toadflax (p. 260), cyclamen sows its own seeds. As the fruit ripens, the long stalk coils into a spiral, thus gradually bringing the fruit down to earth and finally below the surface.

FIELDS AND MEADOWS

In the high woods that crest our hills,
Upon a steep, rough slope of forest ground,
Where few flowers grow, sweet blooms today I found
Of the Autumn Crocus, blowing pale and fair.
Dim falls the sunlight there ;
And a mild fragrance the lone thicket fills.

Languidly curved, the long white stems
Their purple flowers' gold treasures scarce display :
Lost were their leaves since in the distant spring,
Their February sisters showed so gay.

The Autumn Crocus : LAURENCE BINYON



In meadows, frequently under solitary trees and on banks and sometimes even, but rarely, in woods the autumn crocus grows. But, like the cyclamen, this plant is more familiar to us under cultivation, though it is a common wild flower in parts of Europe, especially lower alpine regions. Though autumn crocus superficially resembles the spring crocus (p. 134), the two flowers must not be confused. Spring crocus belongs to the iris family (IRIDACEAE, Monocot.); autumn crocus to the lily family (LILIACEAE, Monocot.), for very sound reasons.

Autumn crocus or meadow saffron is the only British wild member of the genus *Colchicum* whose home is mainly Asiatic Turkey. This plant (*C. autumnale*) possesses a large corm from which the flower will emerge even if it is stored out of contact with soil. In normal circumstances, broad, lance-shaped leaves develop from the corm, and grow six to twelve inches high. But during August these leaves wither away and then up shoot the pale-purple (rarely white) large flowers, growing in groups yet looking very solitary and alone apart from the grass around them. For this reason the flowers are sometimes known as naked ladies or naked boys, and as such have sometimes figured in literature even in Gilbert White's *Natural History of Selborne*. A modern poet also refers to autumn crocus by these names :

Or those pure chalices that Kentish
men
Call Naked Boys, but by a lovelier
name
Others call Naked Ladies, slender,
bare,
Dressed only in their amethystine
flame :
The Meadow Saffron magically
sprung
By dawn in morning orchards in
the grass
Near paths where shepherds on
their errand pass,
But ender-night beheld no crocus-
colour there.

The Garden :
V. SACKVILLE-WEST

Alas, the individual flower lasts a very short time, though specimens appear during August to October. It is similar to the spring crocus, though here there are six stamens. The ovary is situated practically on the corm itself and thus below



Harold Bastin

AUTUMN CROCUS

the soil protected from unkind weather. The perianth forms a long tube which opens out into six large segments. The base of a stamen is fused with the base of a perianth segment. The ovary itself is three-chambered, being formed from three fused carpels. Emerging from the top of the ovary is a very long style with three long spreading stigmas.

The flower is pollinated by bees. After fertilisation the fruit capsule is carried up above the soil by the elongation of the floral receptacle; and while this is happening the next season's foliage leaves are developing.

Autumn crocus is of peculiar interest to plant physiologists and geneticists. It has been claimed that it affects the growth and development of other plants growing in close proximity to it. Be that as it may, we do know that the seeds contain a particularly interesting substance called colchicine, which has been shown to have remarkable effects on the growth of other plants — sometimes making them grow more robust, but certainly affecting the structure of their cells in ways not yet fully worked out by the botanist. All parts of the plant are toxic to animals, so it can be a menace to farm stock.

As I came along, I saw one of the prettiest sights in the flower way that I ever saw in my life. It was a little orchard; the grass in it had just taken a start, and was beautifully fresh; and very thickly growing amongst the grass, was the purple-flowered *Colchicum* in full bloom. They say that the leaves of this plant which come out in the spring and die away in the summer, are poisonous to cattle if they eat much of them in the spring.

Rural Rides (September 13, 1826): WILLIAM COBBETT

And now let us turn our attention to the gentians, those beautiful flowers so beloved by rock-garden enthusiasts and by those who are familiar with the alpine flora of southern Europe.

Bavarian gentians, big and dark, only dark
darkening the day-time torch-like with the smoking blueness of Pluto's gloom,
ribbed and torch-like, with their blaze of darkness spread blue
down flattening into points, flattening under the sweep of white day,
torch-flower of the blue smoking darkness, Pluto's dark blue daze,
black lamps from the halls of Dis, burning dark blue,
giving off darkness, blue darkness, as Demeter's pale lamps give off light,
lead me then, lead me the way.

Bavarian Gentians: D. H. LAWRENCE

We have already met the family to which gentians belong (*GENTIANA-CEAE*, *Dicot.*, p. 266), though not the gentians themselves. They are included in the genus *Gentiana*, named after Gentius, King of Illyria (in the Balkans), who used the plants as medicine. Most British gentians are late summer flowers, though the spring gentian (*G. verna*) blooms during April to June. This plant is so rare that it was not mentioned during those months, though it is more like the matted Continental gentians than most British species are. The most common British gentians are field gentian, autumnal gentian (or felwort) and the marsh gentian

(p. 547); but these grow erect, not forming mats of leaves and very conspicuous blue flowers as many non-British gentians do.

Field gentian (*G. campestris*) favours chalk and limestone grassy fields and slopes, presenting its dull purple flowers during August and September. It is a biennial growing three to twelve inches high with long, lance-shaped and pointed leaves borne in opposite pairs and having entire margins. The fairly large flowers are usually crowded in small groups at the tops of the erect branched shoots. The sepals form a four-cleft tube, the two outer lobes being much larger than the two inner ones. There are four petals which form a long broad tube, but at its rim this opens out into four pointed lobes. This corolla is fringed at its throat so that only long-tongued insects such as butterflies can get at the nectar. There are four stamens whose filaments are fused towards their bases to the inside of the corolla tube: the stamens alternate with the corolla lobes. The one- or two-chambered long ovary is formed from two carpels. There is a short style with a two-cleft stigma.



Ernest G. Neal

FIELD GENTIAN

The autumnal gentian or felwort (*G. amarella*, diminutive of the Latin *amarus*, bitter) is a small, very erect plant growing two to twelve inches high in calcareous pastures and sometimes also on dry heaths. The alternative common name is most probably a diminutive of feldwort, field plant. The leaves of this species are a little smaller and less pointed than those of the field gentian, but the terminal purple flowers are as large as those of the field gentian. Here the calyx and corolla tubes are five-cleft, and there are five stamens; but apart from that the flower is of the same fundamental structure as that of other gentians. The flower of autumnal gentian is very sensitive to light, opening only during bright sunlight.

THE FLORAL YEAR

OTHER FLOWERS WHICH MAY APPEAR IN WOODS, HEDGEROWS, FIELDS AND MEADOWS DURING AUGUST

(The number following each flower is the page on which it is mentioned or described)

TREES

Chestnut, Sweet, 414	Lime, Small-leaved, 412
Lime, Common, 412	Tree of heaven, 414
Lime, Large-leaved, 412	Tulip tree, 278

WOODS

Angelica, 419	Helleborine, Broad-leaved, 422
Avens, Water, 287	Hempnettle, Common, 455
Avens, Wood, 287	Holly, 199
Balsam, Yellow, 421	Loosestrife, Wood, 216
Bell-flower, Giant, 416	Nettle, Common stinging, 311
Bell-flower, Nettle-leaved, 416	Nettle, Roman, 313
Betony, Wood, 294	Nettle, Small stinging, 313
Bird's nest, Yellow, 296	Nightshade, Deadly, 288
Bramble, 424	Nightshade, Enchanter's, 287
Buckthorn, Alder, 203	Orchis, Butterfly, 297
Burnet saxifrage, 420	Orpine, 467
Centaury, Common, 338	Pimpernel, Yellow, 216
Clematis, Wild, 426	Sage, Wood, 294
Clubrush, Wood, 497	St. John's wort, Hairy, 419
Corydalis, White climbing, 295	Stitchwort, Greater, 157
Cow-wheat, Common, 216	Teasel, Wild, 541
Crane's bill, Stinking, 225	Touch-me-not, 421
Figwort, Knotted, 417	Traveller's joy, 541
Foxglove, 284	Tutsan, 49
Germander, Wood, 294	Valerian, Great or true, 432
Golden rod, 421	Vetch, Tuberous bitter, 215
Gromwell, Common, 420	Woundwort, Hedge, 433

HEDGEROWS

Avens, Wood, 287	Crane's bill, Dove's-foot, 177
Basil, Wild, 433	Crane's bill, Stinking, 225
Bedstraw, Hedge (Large), 428	Daisy, 127
Bedstraw, Lady's, 334	Dandelion, 129
Bindweed, Great, 306	Deadnettle, White, 222
Bittersweet, 306	Dock, Broad-leaved, 463
Bramble, 424	Dock, Red-veined, 464
Bryony, White, 218	Dock, Sharp, 464
Burdock, 430	Dodder, Greater, 433
Calamint, 432	Feverfew, 431
Campion, Red, 223	Figwort, Knotted, 417
Catmint, 432	Foxglove, 284
Cleavers, 316	Fumitory, Rampant, 317
Clematis, Wild, 425	Goosegrass, 316

AUGUST

- | | |
|---|--|
| <p>Hogweed, 429
 Holly, 199
 Honeysuckle, 308
 Hops, 426
 Horehound, Black, 354
 Mallow, Common, 348
 Mugwort, 540
 Nettle, Common stinging, 311
 Nettle, Roman, 313
 Nettle, Small stinging, 313
 Nightshade, Woody, 306</p> | <p>Ox-tongue, Bristly, 316
 Parsley, Fool's, 461
 Parsley, Hedge, 462
 Parsnip, Cow, 429
 Stitchwort, Greater, 157
 Traveller's joy, 425
 Vetch, Bush, 225
 Vetch, Hedge, 225
 Vetch, Tufted, 314
 Violet, Dog, 153
 Woundwort, Hedge, 433</p> |
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FIELDS AND MEADOWS

- | | |
|--|---|
| <p>Bartsia, Red, 367
 Bedstraw, Lady's, 334
 Bistort, 335
 Broomrape, Lesser, 340
 Bugle, Field, 214
 Bugle, Yellow, 239
 Burnet, Great, 330
 Burnet, Salad, 329
 Burnet saxifrage, 420
 Buttercup, Bulbous, 229
 Buttercup, Common, 323
 Buttercup, Creeping, 229
 Champion, Bladder, 334
 Carrot, Wild, 334
 Cat's-ear, Long-rooted, 328
 Centaury, Common, 338
 Centaury, Yellow, 338
 Chickweed, Field mouse-ear, 173
 Chickweed, Small, 95
 Clover, Dutch, 233
 Clover, Purple, 233
 Clover, Strawberry, 438
 Clover, White, 233
 Cyclamen, 529
 Daisy, 127
 Daisy, Moon-, 324
 Daisy, Ox-eye, 324
 Dandelion, 129
 Dewberry, 435
 Dropwort, 330
 Dyer's green weed, 435
 Feverfew, 431
 Fiorin, 320
 Flax, Purgings, 338
 Fleabane, Blue, 442
 Garlic, Field, 474
 Grass, Cock's foot, 322</p> | <p>Grass, Meadow fescue, 320
 Grass, White bent, 320
 Ground pine, 239
 Harebell, 483
 Hawkbit, Autumnal, 444
 Hawkbit, Rough, 327
 Hawkweed, Mouse-ear, 444
 Lady's mantle, 239
 Lady's tresses, 449
 Liquorice, Wild, 332
 Mallow, Musk, 445
 Marjoram, 485
 Medick, Black, 236
 Milkwort, 339
 Nettle, Common stinging, 311
 Nettle, Roman, 313
 Nettle, Small stinging, 313
 Orchis, Frog, 341
 Orchis, Pyramidal, 448
 Orchis, Small butterfly, 341
 Parsley, Fool's, 461
 Plantain, Greater, 336
 Plantain, Hoary, 337
 Plantain, Lamb's-tongue, 336
 Ragwort, 326
 Rampion, Round-headed, 446
 Rest harrow, Common and Spiny, 482
 Rock rose, 447
 Scabious, Devil's-bit (Premorse), 445
 Scabious, Field, 328
 Scabious, Small, 444
 Self-heal, 445
 Shamrock, 332
 Snakeweed, 335
 Spikenard, Ploughman's, 443
 Tare, Hairy, 333
 Thistle, Scotch, 471</p> |
|--|---|

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Thistle, Spear-plume, 440
Toadflax, Yellow, 438
Trefoil, Bird's-foot, 436
Trefoil, Hop, 236
Trefoil, Strawberry, 435
Trefoil, Yellow-flowering, 332

Vetch, Hairy, 332
Vetch, Purple milk, 332
Vetch, Sweet milk, 332
Vetchling, Yellow, 331
Violet, Dog, 153
Yarrow, 441

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MORE WEEDS

AMONG the many weeds of farm and garden, white goosefoot has been much in evidence for some time now ; but it does not usually begin to flower before August ; then it continues to do so until the end of September. This plant belongs to the genus *Chenopodium* of the beet family CHENOPODIACEAE, Dicot. (p. 351), to which Good King Henry (p. 351) also belongs. When discussing the latter plant we examined the significance of both common name, goosefoot, and generic name, *Chenopodium*. Apart from Good King Henry, most other members of the genus (and there are about a dozen) are goosefoots. There are, for example, red goosefoot (*C. rubrum*), upright goosefoot (*C. urbicum*), nettle-leaved goosefoot (*C. murale*), white goosefoot (*C. album*), etc. All are uninteresting plants with insignificant flowers. White goosefoot is probably the most common of all species.

White goosefoot sometimes becomes quite prolific on agricultural land and in gardens ; but it also thrives along waysides and in waste places. In some localities it is known as fat hen and in others as Dirty Dick. In the United States, where it also is a weed, it is called lamb's quarters or pigweed. Fortunately it is a normally growing herb with no creeping roots or stems and no very tough root, so it is easily eradicated. It grows anything from six inches to three feet high, branching fairly freely when older and assuming a pyramidal form. The entire plant tends to be slightly succulent and it is covered with a white mealy powder. The only time when it is really attractive is when it is quite young and covered with early morning dew, for then the leaves, especially their under-sides, assume a mauve bloom. The leaves are stalked with triangular, bluntly toothed blades.

The small, insignificant, greenish flowers are borne in dense spikes — terminal and axillary. Each flower has five perianth segments which remain after fertilisation and enclose the fruit which takes the form of a single nut ; five stamens and a single-chambered ovary with two styles.

As in the case of Good King Henry, white goosefoot is edible, though it is seldom eaten in Britain. In parts of the United States, however, and elsewhere, the tender shoots are treated like green spinach.

Corn sow-thistle or milk-thistle, a rather attractive composite (COMPOSITAE, Dicot., p. 126), is now blooming (August to September) in cornfields and other cultivated areas. It is a species of the genus *Sonchus*, and therefore closely related to the common sow-thistle (*S. oleraceus*, p. 346). Corn sow-thistle (*S. arvensis*) is a much larger plant, however, growing two to three feet high, and, whereas the common sow-thistle is annual, this species is perennial.

The succulent leaves are shaped somewhat like those of the dandelion except that the large lobes do not point backwards (except in the case of the radical leaves) and the serrations of the margins are finer. The bases of the cauline leaves encircle the stem. The large yellow flower-heads, which appear during August and September, are borne on terminal branch stems. All the flowers are ligulate and each has a hairy pappus.



WHITE GOOSEFOOT

The mints belong to the genus *Mentha* of the family LABIATAE, Dicot. (p. 158). But there are so many hybrids and varieties of this genus, even in the wild flora, that it is often difficult to distinguish them. Most of the mints are water-loving plants, so detailed consideration of them will be deferred until we visit such habitats (p. 546). Attention should be directed here, however, to the corn or field mint (*M. arvensis*) which grows in cornfields—a perennial attaining a height of one to two feet and presenting its small lilac-coloured flowers in tight axillary whorls during August to October. The flowers do not

THE FLORAL YEAR



Harold Bastin

CORN MINT

form terminal, pyramidal mints as most mints do. The plant has an unpleasant smell.

OTHER WEEDS WHICH MAY APPEAR IN BLOOM DURING AUGUST

(The number following each flower is the page on which it is mentioned or described)

- | | |
|--------------------------------|---------------------------------|
| Alkanet, Field, 370 | Daisy, 127 |
| Bartsia, Red, 367 | Dandelion, 129 |
| Bindweed, Black, 455 | Deadnettle, Red, 179 |
| Bindweed, Small, 361 | Dodder, Flax, 452 |
| Buckwheat, 465 | Dodder, Greater, 433 |
| Buckwheat, Climbing, 455 | Feverfew, Corn, 431 |
| Bugloss, Small, 370 | Flax, Common, 450 |
| Buttercup, Creeping, 229 | Fluellen, 454 |
| Campion, Bladder, 334 | Fumitory, Common, 358 |
| Campion, White, 369 | Goosefoot, Red, 466 |
| Chamomile, Corn, 364 | Grass, Couch, 371 |
| Chamomile, Wild, 365 | Groundsel, 98 |
| Charlock, 360 | Heartsease, 246 |
| Chickory, 453 | Hempnettle, Common, 455 |
| Chickweed, Small, 99 | Hempnettle, Downy, 455 |
| Corn cockle, 452 | Hempnettle, Large-flowered, 455 |
| Cornflower, 345 | Hempnettle, Red, 455 |
| Crane's bill, Dove's-foot, 177 | Knapweed, Great, 366 |

AUGUST

Knotgrass, 465	Pimpernel, Scarlet, 368
Knotweed, 465	Plantain, Greater, 336
Madder, Field, 314	Plantain, Hoary, 337
Marigold, Corn, 365	Plantain, Lamb's-tongue, 336
Marjoram, 485	Ragwort, 326
Mayweed, Scentless, 365	Scorpion grass, Field, 370
Mayweed, Stinking, 364	Shepherd's needle, 369
Mercury, Annual, 468	Shepherd's purse, 95
Mignonette, Wild Yellow, 354	Snapdragon, Lesser, 454
Mustard, Black, 361	Speedwell, Field, 180
Mustard, Treacle, 361	Spurge, Dwarf, 456
Mustard, White, 361	Spurge, Petty (Purple), 456
Mustard, Wild, 361	Spurge, Sun, 367
Nightshade, Black, 453	Thistle, Scotch, 471
Nipplewort, 470	Thyme, Basil, 371
Pansy, Wild, 246	Toadflax, Common, 438
Persicaria, Climbing, 455	Toadflax, Yellow, 438
Persicaria, Pink (Pale-flowered), 456	Woundwort, Corn, 180
Pheasant's eye, 357	Woundwort, Field, 180

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WASTE PLACES

IN many waste places and in dry fields and even hedgerows provided they are dry and exposed to plenty of sunlight, the particularly lovely tansy is now beginning to display its masses of golden-yellow flower-heads and will continue to do so throughout August and September. Tansy is a composite (COMPOSITAE, Dicot., p. 126) and is the only British representative of the fairly large, cosmopolitan genus *Tanacetum* (*T. vulgare*) whose name is a contraction of the Greek *athanatos*, immortal or everlasting, for the flowers last a very long time even after they have been cut (*Plate 23*).

This perennial grows two to three feet high and is easily distinguished by its finely divided leaves. Each leaf is cut into anything from twelve to twenty pairs of lateral pinnae and a terminal one. Then the lower and larger pinnae are again subdivided into pairs of smaller pinnae, and the margins of all these are serrated. The flower-heads, too, are diagnostic, for they are button-like and massed into large, terminal corymbs. The flower-head is supported by an involucre of small, green, tightly overlapping bracts. The golden-yellow disk flowers are tubular and male only. The small, also golden-yellow, ray flowers are ligulate and are female only. The fruit has no pappus for there is none on the female flower.

THE FLORAL YEAR

Tansy was at one time used as a medicinal herb and also for flavouring puddings and cakes because it is aromatic. Opinions must have varied concerning tansy pudding (which was served mainly at Easter time, representing the bitter herbs of the Passover), for though Gerard wrote :

In the spring-time are made with the leaves hereof, newly sprung up, and with eggs, cakes and tansies, which be pleasant to taste, and good for the stomache, the Rev. C. A. Johns called tansy pudding a "nauseous dish". And Vernon Randall tells us that Pepys ate a tansy in 1666 and that it was once tried at the High Table at Magdalene College, Cambridge, but that it was "too nasty to be repeated".

Wormwood is a handsome plant vegetatively, but it is no more impressive when in bloom for the flowers are insignificant. It too is a member of the family COMPOSITAE, Dicot., and is included in the genus *Artemisia*, a very large genus at home, especially in the arid regions of the United States and on the Russian steppes. There are about five species in Britain. The genus was named after Artemis, the Greek goddess.

Wormwood (*A. absinthium*) is a perennial which grows one to two feet high in waste places and bears its flowers during the months of August

and September. It is a bushy plant and has an aromatic smell. The stems and leaves are covered with a white silky down. The leaves are deeply pinnate, and each pinna is deeply cut into pointed, lance-shaped lobes.

The flower-heads grow in terminal, pyramidal panicles, and each flower-head droops. It is small and contains only a few reddish-yellow tubular flowers.

From wormwood, the flavouring matter absinthe is extracted.

Mugwort (*A. vulgaris*), so named because at one time it was used for flavouring alcoholic drinks, is perhaps an even more common species. It too grows in waste places and also in hedgerows, but it often begins blooming in July and so on until September. It is at its best, however, during August. It can be distinguished from wormwood



Harold Bastin

INFLORESCENCE OF MUGWORT

in that it grows taller (two to four feet) and its leaves are downy on their under-surfaces only. Sparrows love the flower-buds of this plant, and they can sometimes be seen in their hundreds flitting among groups of mugwort.

Though the striking flower-heads of the teasels — wild, small and fuller's — remain conspicuous for a very long time after the flowers have bloomed, now is the best time to examine them, for they begin blooming during August and continue to do so throughout this month and the next.

Teasels, together with the scabiouses (p. 444, etc.), make up the total of the British indigenous representatives of the family DIPSACACEAE, Dicot. In fact, there are only two British wild genera: *Scabiosa* (scabious species) and *Dipsacus* (the teasels). The generic name of the teasels reflects a foliar characteristic (see below).

The wild teasel (*D. sylvestris*) grows in waste places and along waysides: it sometimes also appears in thickets and along river-banks. It is a tall, tough, fibrous perennial attaining a height of four to six feet (Plate 23).

The gothic teasel, tall as hollyhock,
Heraldic as a halberd and as tough.

The Garden: V. SACKVILLE-WEST

Its grooved stems are covered with sharp strong prickles. The lance-shaped leaves are borne in opposite pairs. Their margins are serrated. Those at the top of the stem are small; those at the bottom much larger, and their bases are fused around the stem, thus forming a cup in which rain-water sometimes collects. This is reflected in the generic name which is from the Greek *dipsao*, to thirst. In the eighteenth century, the water thus collected was recommended as a form of face lotion.

The female Councillors of Beauty are very choice of the Rain Water which has stood some time in the Leafy Bason of this Plant, and use it to take off the Freckles and other little Blemishes of the Skin.—DEERING

The conspicuous flower-head is egg-shaped. When very young it



Anne Jackson

WILD TEASEL

THE FLORAL YEAR

is enclosed in an involucre of very long, thin, green, spiny and sharply pointed bracts. Later, this involucre opens out. Later still, when the fruits are forming, the bracts become brown, tough and woody. On the egg-shaped floral axis itself there are many small mauve flowers each of which is subtended by a small but fairly long, lance-shaped spiny bract, the uppermost bracts being the longest. Thus the entire inflorescence presents a spinose appearance. The flowers themselves expand at different times in irregular patches during August and September.

Each flower is composed of a small calyx cup made up of four sepals with no teeth at its rim. Emerging from this cup is a long corolla tube of four joined petals which is more or less cornet-shaped with four semi-circular lobes at the rim. The tube is white and shades up to mauve at the lobes. There are four long stamens protruding beyond the corolla-tube and one long style.

The fruits are small and dry and each contains one seed. After these have been shed, the entire flower-head becomes dry, tough and brown, for now it is composed of nothing but pronounced, curved involucre bracts and the egg-shaped head of small, spiny floral bracts. People like to gather these heads and dye them various colours to use for household decoration.

A species closely related to *Dipsacus sylvestris* is *D. fullonum*, the fuller's teal (from the Latin *fullo*, a fuller). So closely related are these two species that in some Floras they are not separated at all. Yet in *D. fullonum* the bracts of the floral axis are hooked, and that is why the old tough flower-heads were at one time used extensively for 'teasing' cloth. The worker who does this is called the fuller: at one time he was known as the burler.

Then up hung on rugged tenters to the fervid sun,
Its level surface reeking, it expands,
And brightening in each rigid discipline,
And gathering worth, as human life, in pains,
Conflicts and troubles. Soon the clothier's shears
And burler's thistle, skim the surface sheen.

The Fleece: JOHN DYER



Harold Bastin

SMALL TEASEL

Years ago, fuller's teal was cultivated in many parts of the country for this very purpose — mainly around the cloth-manufacturing towns and villages. Today, however, it is grown in but a few localities. It still occurs in the wild state, especially in cloth districts, though it cannot be looked upon as a true British native.

Then there is the small teal

AUGUST

(*D. pilosus*), sometimes also known as shepherd's rod. This species grows in a few moist and shady waste places, but it is rare. It grows only two to four feet high, but it is perennial and presents its flowers, which in this case are white, over the same season as common teasel. Moreover, the involucre bracts are much smaller and the floral axis is not very long, so that the flower-head is not egg-shaped but almost flat — more like that of scabious.

OTHER FLOWERS WHICH MAY BE FOUND BLOOMING IN WAYSIDES AND WASTE PLACES AND ON WALLS DURING AUGUST

(The number following each flower is the page on which it is mentioned or described)

WAYSIDES AND WASTE PLACES

Bramble, 423	Mallow, Common, 348
Broomrape, Tall, 346	Melilot, Tall, 347
Buckwheat, 465	Mercury, Annual, 468
Burdock, 430	Mignonette, Wild white, 354
Celandine, Greater, 155	Mignonette, Wild yellow, 354
Chamomile, Ox-eye (Yellow), 468	Mullein, Great, 355
Chickory, 453	Nettle, Common stinging, 311
Cinquefoil, Creeping, 344	Nettle, Roman, 313
Clary, 244	Nettle, Small stinging, 313
Crane's bill, Bloody, 468	Nightshade, Black, 453
Crane's bill, Dove's-foot, 177	Nightshade, Deadly, 288
Crane's bill, Stinking, 225	Nipplewort, 470
Daisy, 127	Orache, 466
Dandelion, 129	Orpine, 467
Deadnettle, Henbit, 244	Parsley, Fool's, 461
Dock, Broad-leaved, 463	Parsley, Hedge, 462
Dock, Curled, 350	Parsnip, Wild, 463
Dock, Red-veined, 464	Persicaria, Pink (Pale-flowered), 456
Dock, Sharp, 464	Persicaria, Spotted, 465
Dodder, Greater, 433	Plantain, Greater, 336
Dyer's rocket (Dyer's weed), 466	Plantain, Hoary, 337
Feverfew, 431	Poppy, Welsh yellow, 472
Fleabane, Canadian, 470	Primrose, Evening, 461
Garlic, Field, 474	Ragwort, 326
Good King Henry, 351	Sage, 294
Goosefoot, Red, 466	Self-heal, 445
Goosefoot, White, 536	Silverweed, 343
Gromwell, Common, 420	Sow-thistle, Common, 346
Hawkbit, Rough, 327	Stork's bill, Hemlock, 255
Hawk's beard, Smooth, 470	Thistle, Scotch, 471
Henbane, 352	Thistle, Star, 472
Horehound, Black, 354	Vervain, 472
Horehound, White, 472	Willowherb, Rose bay, 458
Knapweed, Hard-head, 345	Woundwort, Hedge, 433
Knotgrass, 465	Yarrow, 441

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WALLS

Celandine, Greater, 155	Navelwort, 382
Cress, Hairy rock, 383	Pearlwort, Annual, 262
Fleabane, Blue, 442	Pellitory-of-the-wall, 383
Hawk's beard, Smooth, 470	Pennywort, Wall, 382
Houseleek, 475	Snappedragon, 476
Lettuce, Wall, 383	Toadflax, Ivy-leaved, 260

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HEATHS

THERE is not much that is new to look for on heaths and other similar habitats during August. In some parts, gorse (p. 95) begins another phase of heavier blooming.

A green and silent spot, amid the hills,
A small and silent dell ! O'er stiller place
No singing skylark ever poised himself.
The hills are heathy, save that swelling slope,
Which hath a gay and gorgeous covering on,
All golden with the never-bloomless furze,
Which now blooms most profusely. . . .

S. T. COLERIDGE

We might, however, look for a floral parasite which grows on gorse, though it is not easy to find. Ling, thyme and other heath plants are sometimes its hosts. It is the lesser dodder, close relative of the great dodder (*Cuscuta europaea*, p. 434) and flax dodder (*C. epilinum*, p. 452), of the family CONVULVULACEAE, Dicot.

Lesser dodder (*C. epithymum*, from the Greek *epi*, upon, and *thymos*, thyme), blooms in August and September — somewhat later than the other species. It is of smaller habit and its flowers are rose-coloured. Indeed, on those rare occasions when one meets it blooming, whole gorse bushes may be concealed by its rosy, tangled masses.

One might also look for pennyroyal which grows on heaths and is now in bloom. It favours damp heaths and is a typical member of the mint family (LABIATAE, Dicot., p. 158). It belongs to the mint genus, *Mentha* (*M. pulegium*). The specific name is from the Latin *pulex*, flea, for the plant was once used as an insecticide.

Pennyroyal is not very common. It is a prostrate perennial which sends up branches two to ten inches high. The egg-shaped leaves are arranged in the usual pairs. Their margins are only very slightly serrated, if at all. The lilac flowers are crowded into axillary whorls and they appear during August to October.

Both perfume and flavour of this plant are agreeable, which explains why it may be seen growing in some cottage gardens, for at one time a tea was brewed from it. This concoction was supposed to cure colds as well as act as a stimulant.

OTHER FLOWERS WHICH MAY APPEAR ON MOUNTAIN, MOOR- LAND OR HEATH DURING AUGUST

(The number following each flower is the page on which it is mentioned or described)

- Allseed, 487
- Bird's foot, 255
- Buckthorn, Alder, 203
- Campion, Moss, 250
- Catchfly, Dwarf, 250
- Cat's ear, Long-rooted, 328
- Chamomile, Common, 487
- Cowberry, 373
- Cow-wheat, Common, 216
- Cranberry, 481
- Dogwood, Dwarf, 373
- Eyebright, 257
- Fleabane, Blue, 442
- Gentian, Autumnal, 533
- Germander, Wood, 294
- Golden rod, 421
- Gorse, 95
- Grass, Matweed, 374
- Grass, Purple moor, 483
- Harebell, 483
- Heath, Cross-leaved, 480
- Heath, Fine-leaved, 480
- Heather, 478
- Ling, 478



(Above) E. J. Bedford. (Below) Harold Bastin

LESSER DODDER

Above, plant parasitic on gorse; *below*, germinating seedling grown from starting point (right) and beginning to coil around a grass stem

THE FLORAL YEAR

Marjoram, 485	St. John's wort, Trailing, 486
Milkwort, 339	St. John's wort, Upright, 486
Orchis, Spotted, 378	Sheep's bit, 376
Pearlwort, Heath, 374	Stitchwort, Heath, 256
Raspberry, 252	Stitchwort, Lesser, 256
Rest-harrow, Common and Spiny, 482	Stork's bill, Hemlock, 255
Roseroot, 381	Sundews, 493
Sage, Wood, 294	Thistle, Carlina, 376
Scabious, Devil's bit (Premorse), 445	Thyme, Wild, 378
Scabious, Sheep's bit, 416	Tormentil, 374
Scabious, Small, 444	Twayblade, Small, 378
St. John's wort, Perforated, 418	Wintergreen, Larger, 485

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WET PLACES

AUGUST is the month of the mints — all members of the genus *Mentha* of the natural order LABIATAE, Dicot. (p. 158). This genus, though not a very large one, is widely represented in Britain by about a dozen species and so many hybrids and varieties that even botanical systematists are not yet satisfied that they have diagnosed them all. Like many other genera of this family, *Mentha* contains many aromatic species. The generic name is Latin for the plant; this was derived from *Menthe*, nymph who was supposed to have been changed into a mint plant.

All mints are perennial. Most of them are water-loving plants. One of the most common species is, in fact, *M. aquatica*, the water mint, sometimes also known as hairy or capitate mint, so called because the ends of the terminal inflorescences are capitate, that is, rounded over like a pin's head (*Plate 21*).

Water mint grows in marshes, ditches and along river-banks and presents its lilac flowers during August to October: sometimes it may be found blooming earlier than this. It is an elegant plant which grows one to four feet high and is hairy. The leaves are oval, serrated and pointed at their apices; but they become smaller and smaller towards the tops of the stems, so that near the tops they look more like simple bracts than leaves.

The flowers are borne in very dense axillary and terminal capitate heads. Each flower is fairly small. The calyx takes the form of a five-toothed hairy tube. The lilac corolla is a four-lobed tube — rather short for a labiate flower, and it is almost regular. There are four long stamens and a four-lobed ovary with a long style which frequently persists with the sepals when the fruit is ripe.

Among other water-loving mints are: round-leaved mint (*M. rotundifolia*) which grows two to three feet high in watery places and presents its lilac-pink flowers in long, interrupted spikes during August and September; horse or long-leaved mint (*M. longifolia*) of similar habitats, growing two to three feet high and having pointed leaves and bearing its lilac flowers in denser spikes during August and September (Plate 23); peppermint (*M. piperata*) which contains a valuable essential oil from which menthol and menthene are extracted — a smaller species one to two feet high growing in many wet places and bearing its lilac flowers in dense whorls on interrupted spikes during August and September; marsh whorled mint (*M. sativa*) which grows one to three feet high and presents dense axillary whorls of lilac flowers during August and September; and spearmint (*M. spicata*) which is commonly cultivated as a herb, normally a water-loving plant which grows one to three feet high and presents its lilac flowers in slender interrupted spikes during August and September.

Several of the mints have been known for centuries and have been cultivated as aromatic pot-herbs and for the aromatic essential oils which they yield.

Woe unto you, scribes and Pharisees, hypocrites! for ye pay tithe of mint and anise and cummin, and have omitted the weightier matters of the law, judgment, mercy, and faith.—St. Matthew, xxiii, 23

Among other late-flowering plants of the marshes and bogs is the marsh gentian, sometimes also known as Calathian violet. It is another member of the genus *Gentiana* of the family GENTIANACEAE, Dicot. (p. 266). It has been given the name *G. pneumonanthe*, from the Greek *pneumon*, lung, and *anthos*, flower, since at one time it was accepted as a specific for lung diseases. It is in general a taller plant than most other members of the genus, growing four to eighteen inches high. It is perennial.

Marsh gentian's leaves are oblong and they are borne in opposite pairs. The flowers, which appear during August and September (Pliny's



Harold Bastin

SPEARMINT

THE FLORAL YEAR

"gift of autumn"), grow massed at the ends of the erect stalks. Each is large and of a blue colour, similar in fundamental structure to the other gentians. The deep-blue petals form a tube which opens out into five campanulate segments. There are green stripes on the outside of the blue tube: but within the tube is of the deepest blue. As Andrew Young so well describes it in his *Prospect of Flowers*, the "tube is so deep a blue, that as one gazes down, inches change to fathoms". There is a fringe on the corolla tube (p. 533).

Marsh mallow prefers marshes near the sea. There is no mistaking it as a member of the mallow family (MALVACEAE, Dicot., p. 348), for it is superficially very like common mallow. Yet, withal, it is not a member of the mallow genus (*Malva*) but of the genus *Althaea*, a small temperate genus to which the garden hollyhock also belongs. The hollyhock is *A. rosea*; marsh mallow is *A. officinalis*. Apart from *A. officinalis* there is only one other wild member of the genus, namely, *A. hirsuta*, the rare hairy mallow of dry places, cornfields, etc. The generic name is from the Greek *althos*, a healing medium, and the specific name of marsh mallow also indicates that it possesses medicinal virtues. At one time it was recommended for curing coughs.



Anna Jackson

PINK BALSAM

Marsh mallow is a perennial which grows two to three feet high and presents its rose-coloured flowers usually during August and September, though in the south it may be found blooming during July. Its leaves are heart-shaped or five-lobed, and have serrated margins. The plant is hairy (*Plate 23*).

The flowers are crowded into terminal panicles. Each is very like those of other mallows; but it is easily diagnosed since there are not only five united sepals but also a surrounding epicalyx of six to nine united bracts.

Though we have already met the yellow balsam (*Impatiens noli-tangere*, p. 421) and the orange balsam (*I. biflora*) of the family BALSAMINACEAE, Dicot., they are both now outdone in distribution and numbers by the pink

balsam (*I. glandulifera*) which has become naturalised and during the past several years has established itself, sometimes in abundance, along river-banks. Though it frequently begins flowering in July (sometimes even in June) it is certainly at its best during August, especially in the midlands and the north. It continues blooming into September.

Pink balsam plants are robust, growing three to six feet high and sometimes enshrouding river-banks and mud-flats in rivers. Each plant has a stout, hollow, ridged and reddish stem which bears large, lance-shaped, serrated leaves in pairs. The veins of the leaves are reddish like the stems.

The flowers are much larger than those of the yellow or the orange balsam. They are borne in groups on long, graceful axillary stalks. The colour varies considerably sometimes even on the same plant, from almost white through various shades of pink to almost red. When in full bloom they produce a veritable cloud of colour along the banks of the river. An outstanding character of the flower is the large, bag-like, conical lower petal at the base of which is a curious, small green spur which contains nectary. The flower is usually pollinated by bees.

OTHER MOISTURE-LOVING, SEMI-AQUATIC AND AQUATIC
PLANTS WHICH MAY APPEAR IN BLOOM DURING AUGUST

(The number following each flower is the page on which it is mentioned or described)

Agrimony, Hemp, 499
Arrow grass, 387
Arrow-head, 511
Asphodel, Bog, 496
Avens, Water, 286
Balsam, Orange, 421
Bedstraw, Bog (Rough marsh), 495
Bedstraw, Marsh (Water), 495
Betony, Water, 504
Bitter cress, Hairy, 186
Blinks, 175
Brooklime, 271
Bulrush, 509
Bur-marigold, Nodding, 490
Bur-marigold, Trifid, 491
Buttercup, Celery-leaved, 263
Chickweed, Great, 507
Chickweed, Water, 175
Clover, Strawberry, 438
Clubrush, Wood, 497
Cotton grass, Common, 385
Crowfoot, Water, 273, 516
Cudweed, Marsh, 495
Dock, Great water, 507
Dropwort, Hemlock water, 495
Dropwort, Water, 515

Figwort, Water, 504
Flag, Yellow, 391
Fleabane, Common, 489
Fleabane, Small, 489
Forget-me-not, 227
Frogbait, 514
Gipsywort, 386
Grass, Reed meadow, 264
Grass, Tall fescue, 322
Helleborine, Marsh, 496
Iris, Wild, 391
Lily, White water, 518
Lily, Yellow water, 519
Lobelia, Water, 515
Loosestrife, Purple, 500
Loosestrife, Yellow, 503
Lousewort, Marsh, 266
Meadowsweet, 385
Milfoil, Water, 398
Monkey-flower, 505
Monk's hood, 390
Musk, 505
Parnassus, Grass of, 491
Pearlwort, Knotted, 488
Pearlwort, Procumbent, 264
Pennywort, Marsh, 265

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Pepper, Water, 507	Skullcap, Greater, 506
Persicaria, Biting, 507	Skullcap, Lesser, 506
Pimpernel, Bog, 495	Soldier, Water, 513
Plantain, Water, 396	Spearwort, Greater, 387
Purslane, Water, 502	Speedwell, Marsh, 496
Ragged robin, 186	Speedwell, Water, 504
Ragwort, Marsh, 491	Spurrey, Knotted, 488
Red-rattle, Marsh, 266	Starwort, Water, 187
Reed, Common, 509	Stitchwort, Marsh, 265
Reed-mace, 510	Stitchwort, Water, 507
Rue, Common meadow, 498	Teasel, Wild, 541
Rue, Small-meadow, 498	Trefoil, Marsh bird's foot, 438
Rush, Common, 508	Trefoil, Strawberry, 438
St. John's wort, Imperforate, 489	Willowherb, Great hairy, 498
St. John's wort, Square stalked, 489	Willowherb, Marsh, 494
Scorpion grass, Tufted, 390	Woad, 507
Shoreweed, 391	Woundwort, Marsh, 489

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COASTAL AREAS

THE most interesting plant to look for on the muddy seashore during August is the glasswort, for its general vegetative habit betrays a salt-water habitat. This plant is also known as sea samphire, but it is not related to the samphire itself (p. 404); indeed each plant belongs to a totally different family, samphire to the UMBELLIFERAE, Dicot., and glasswort to CHENOPODIACEAE, Dicot. (p. 351). As we have already seen (pp. 351, 409), the latter family contains several salt-water plants.

Glasswort belongs to the genus *Salicornia*, a genus comprising about ten species of salt-water plants of cosmopolitan distribution, though glasswort itself (*S. europaea*) is the only common British species. The generic name reflects the habit and habitat, for it is from the Latin *sal*, salt, and *cornu*, a horn, for the plant has horn-like branches.

Glasswort is an annual which grows six to eighteen inches high. There is no mistaking it, for, in view of the fact that it must practise the most rigid economy with its fresh-water supplies and so store as much as possible, it resembles a small, much-branched cactus. The stem is very succulent, but here it is conspicuously jointed, and the leaves are entirely suppressed.

The insignificant green flowers are borne in groups of three, two oppositely arranged groups at each or every other stem joint near the ends of the branches. The flowers appear during August and September.

Each flower has a fleshy perianth made up of four, undivided members, two stamens and a very short style with a two-cleft stigma.

The only truly indigenous member of the very large and cosmopolitan genus *Aster*, of the family COMPOSITAE, Dicot. (p. 126), the genus to which Michaelmas daisies belong (but not the familiar annual garden asters), is sea aster or sea starwort. This is now blooming in salt marshes and on marine cliffs, though it is not common. The flower-heads resembles stars, hence the generic and common names.

Sea aster or starwort (*A. tripolium*) is a perennial growing one to three feet high. Its somewhat fleshy leaves are very simple, long and lance-shaped with smooth margins. The flower-heads appear in massed corymbs during August and September. The tubular disk flowers are yellow: the fairly widely spread ligulate ray flowers are bluish-purple.



Ernest G. Neal

GLASSWORT

OTHER FLOWERS WHICH MAY APPEAR IN COASTAL AREAS DURING AUGUST

(The number following each flower is the page on which it is mentioned or described)

Beet, Sea, 409	Mallow, Tree-, 521
Bindweed, Seaside, 409	Pearlwort, Sea, 264
Cabbage, Wild (Sea), 405	Pink, Sea, 188
Campion, Sea, 408	Plantain, Sea, 407
Celery, Wild, 524	Poppy, Yellow horned, 524
Club-rushes, Seaside, 524	Purslane, Sea, 275
Crane's bill, Stinking, 225	Roseroot, 381
Cress, Hoary rock, 383	Saltwort, 528
Dropwort, Parsley, 407	Samphire, 404
Eel grass, 409	Scabious, Sea, 527
Grass, Marram, 407	Spurrey, Seaside sandwort, 528
Henbane, 352	Tamarisk, 522
Holly, Sea, 526	Thrift, 188
Lavender, Sea, 527	Wrack, Grass, 409

PART X

SEPTEMBER TO DECEMBER

Oh NATURE ! all-sufficient ! over all !
Enrich me with the knowledge of thy works ;
Snatch me to heaven ; thy rolling wonders there,
World beyond world, in infinite extent,
Profusely scatter'd o'er the void immense,
Shew me ; their motions, periods, and their laws,
Give me to scan ; thro' the disclosing deep
Light my blind way : the mineral STRATA there ;
Thrust, blooming, theme the vegetable world ;
O'er that the rising system, more complex,
Of animals ; and higher still, the mind,
The varied scene of quick-compounded thought,
And where the mixing passions endless shift ;
These ever open to my ravish'd eye ;
A search, the flight of time can ne'er exhaust !
But if to that unequal ; if the blood,
In sluggish streams about my heart, forbids
That best ambition ; under closing shades,
Inglorious, lay me by the lowly brook,
And whisper to my dreams. From THEE begin,
Dwell all on THEE, with THEE conclude my song ;
And let me never, never stray from THEE !

The Seasons (Autumn) : JAMES THOMSON

THE floral season, so far as fresh arrivals are concerned, is now fast drawing to a close. But this does not mean that there are no flowers to be seen — far from it. The countryside during a fine September day, and indeed well into October, is usually gay with floral colour. Patches of yellow in the meadows and on the downs signify ragwort's blooming, and in the more chalky areas the sky-blue chickory (which begins flowering in July) is still bedecking the roadsides and cultivated ground. Marjoram, yellow toadflax, clover, fumitory and a host of others still succeed in bestowing on the meadows the semblance of multi-coloured carpets. But since all these flowers first made their appearance in earlier months they have already received consideration. (A list of the most common of them appears on pp. 557-561).

Only the rare crocuses, the strawberry tree and the ivy may be justly considered as autumn arrivals. So our observations will, after them,

turn to other things botanical, such as fruits, autumn coloration, leaf-fall and so forth.

O Autumn, laden with fruit, and stained
With the blood of the grape, pass not, but sit
Beneath my shady roof; there thou may'st rest
And tune thy jolly voice to my fresh pipe,
And all the daughters of the year shall dance!
Sing now the lusty song of fruits and flowers.

To Autumn: WILLIAM BLAKE

Earth's flaunting flower of passion fadeth fair
To ripening fruit in sunlit veils of the air,
As the art of man makes wisdom to glorify
The beauty and love of life born else to die.

The Months: R. BRIDGES

AUTUMN FLOWERS

ONE of the most intriguing plants, blooming as it does so late as in September and October, is the strawberry tree. It is not really indigenous to Britain though it does occur in the wild state in Ireland, especially around Killarney. It is said that the monks of Muckross Abbey in Co. Kerry introduced this plant from either Spain or Italy where it is certainly widely distributed even today. The strawberry tree is, however, frequently seen growing cultivated in shrubberies and gardens, and it sometimes occurs in copses and woods in Britain — possibly as a garden escape.

The strawberry tree is a member of the heather family (ERICACEAE, Dicot.) ; in fact, the similarity between the flower of the strawberry tree and that of the heather (p. 478) is very striking. The strawberry tree belongs to the genus *Arbutus*, a genus of plants, mainly small trees, distributed over the Mediterranean regions, Western Asia and North America. So far the origin of the generic name has not been traced. The strawberry tree is *A. unedo*. Pliny derived the specific name from *unus*, one, and *edo*, to eat, thus reflecting the unpalatable nature of the fruit — so unpleasant that it is unlikely that one would wish to try it a second time. On the other hand, since this plant is a characteristic feature of the Mediterranean seaboard, the specific name might be derived from the Greek *oinaros*, a sea-cherry.

The strawberry tree (*Arbutus unedo*) must not be confused with the trailing arbutus or mayflower of the United States. This fragrant plant



STRAWBERRY TREE

Foliage, flowers and fruit

is common in the rocky woods of parts of the States and blooms very early in the year, sometimes before the winter snows have gone. It has therefore found favour with American poets :

Darlings of the forest !
Blossoming alone
When Earth's grief is sorest
For her jewels gone—
Ere the last snow-drift melts
Your tender buds have blown.

Trailing Arbutus : ROSE T. COOKE

The shy little Mayflower weaves her nest,
But the south wind sighs o'er the fragrant loam,
And betrays the path to her woodland home.

Waking of the Heart : SARAH H. WHITMAN

Though the trailing arbutus belongs to the same family as the strawberry tree (ERICACEAE), it is not a member of the same genus (*Arbutus*), but to the genus *Epigaea*, and its specific name (*E. repens*) indicates its creeping habit. Neither the trailing arbutus nor any other member of the genus *Epigaea* is to be found growing wild in Britain.

Arbutus unedo is an evergreen tree growing twenty to thirty feet high with a rough reddish bark. The leaves are very dark green in colour, oval in shape and have finely serrated margins.

The comparatively small flowers, pink or greenish white in colour (there is also a rare deep red variety), are borne in drooping racemes towards the ends of the branches. Each flower is bell-shaped, having four insignificant sepals, four petals forming the bell, four stamens and four carpels united with a common style. The corolla bell is deciduous and falls off whole after fertilisation (which is effected by insects) has taken place. At this time of the year the plant is particularly striking, for though it blooms every year the fruits take two years to ripen, so that at present on one and the same tree there are racemes of this year's flowers and last year's ripening fruits. The fruits when ripe take the form of bright red berries covered with blunt spines, giving the whole a superficial resemblance to a strawberry; hence the common name. This beautiful shrub should therefore be encouraged in ornamental gardens and shrubberies, though it thrives best near the south coast and cannot withstand sharp frosts well inland and up north.

Two rare flowers which make their appearance during September are the naked-flower crocus and the saffron crocus. These must not be confused with the meadow saffron or autumn crocus



NAKED-FLOWER CROCUS

Inset, section of flower

which, in spite of its name, appears during the summer (though it often flourishes well into autumn, p. 531). The saffron and naked-flower crocuses belong to the iris family (IRIDACEAE, Monocot.) to which the garden spring crocus also belongs; the meadow saffron is a member of the lily family (LILIACEAE, Monocot.). Gilbert White considered it one of the "wonders of creation" that some crocuses bloomed in autumn and others in spring.

Both saffron and naked-flower crocuses belong to the genus *Crocus*, a name which is derived from the Greek *krokos*, saffron, since the stigmas of some species are used for the production of saffron (see below). The saffron crocus is *C. sativus*, the specific name being from the Latin for cultivated or sown; indeed this species is still much cultivated for saffron production. The naked-flower crocus is *C. nudiflorus*, the specific name indicating that the flower appears naked, that is without leaves. In fact, the flowers of both species do this: the long, blade-like leaves do not develop until the following spring.

The naked-flower crocus is very rare in Britain, though it may occur in some meadows, especially in the midlands. The flowers are purple, growing three to six inches high. The plant, like all species of *Crocus*, is perennial, carrying itself over into the next season by means of a corm (p. 54). The saffron crocus is also purple.

The flower of both species is composed of six very conspicuous purple perianth segments in two whorls of three each. These oval segments are united at their bases to form a tube which is so long that the ovary at its base remains beneath the soil, thus protected against the inclement weather one must expect at this time of the year. The perianth segments of the naked-flower crocus are rather pointed; those of the saffron crocus are more rounded at their tips. Inserted at the top of the long, thin perianth tube, one opposite each outer perianth segment, are three stamens whose anthers open outwards so that the pollen, when exposed, comes into direct contact with the body of any insect which visits the flower for the nectar which its ovary secretes. The ovary is three-chambered and has a long style which bears at its tip a much-branched stigma.

It is the orange-red branches of the stigma (and the top of the style itself) which form the basis of saffron. Only those of the species *C. sativus* are used. The origin of saffron is lost in antiquity. It was apparently unknown to the Egyptians, though we do know that the ancient Persians cultivated the crocus for its saffron. The substance is also mentioned by Homer, Hippocrates and other classical writers. It also figures in the sixteenth-century *materia medicas* of China. In early times the chief centre of saffron cultivation was around the town of Corycus in Cilicia. More than a thousand years ago, the Arabs living in Spain also cultivated saffron; but in due course the practice there and in other parts of Western Europe died out. It was eventually revived by the Crusaders who brought back corms to Western Europe, including Britain. From 1339, the

saffron crocus was extensively cultivated around Histon in Cambridgeshire and Saffron Walden in Essex: the latter town deriving its name from the industry. Those taking part in this pursuit were called crokers. It is likely that saffron production spread to other parts of the country; but it had ceased almost entirely by 1770. Today saffron is produced mainly in France, Spain and Sicily.

In earlier times, saffron was used for various medicinal purposes, and as one might expect, much superstition sprang up around it. Those who slept on a saffron bag, for example, were always merry and cheerful, and they were assured of a long life. Again, the name crocodile is supposed to mean crocus-dreader, and only when shed in the presence of saffron crocus are the crocodile's tears genuine. A sixteenth-century recipe says: "Saffron killeth moths if it be sowed in paper bags verie thin, and laid up in presses amongst tapistrie or apparell". Using saffron, Italian ladies loved to dye their black hair an orange-red. The Greeks perfumed their theatres and other assembly halls with saffron, and the Romans used it in their baths. Today, as in years past, this substance is used for flavouring and colouring cakes and other dishes, liqueurs, etc. 'Hay saffron' consists of the loose, dry stigmas; 'cake saffron' is made by pressing the stigmas and style tips together and allowing the mass to dry into a cake.

Let me see; what am I to buy for our sheep-shearing feast? . . . I must have saffron to colour the warden pies; mace; dates? — none that's out of my note; nutmegs, seven; a race or two of ginger, but that I may beg; four pounds of prunes, and as many of raisins o' the sun.

The Winter's Tale, Act IV, Sc. 3: SHAKESPEARE

OTHER FLOWERS WHICH MAY APPEAR DURING SEPTEMBER

(The number following each flower is the page on which it is mentioned or described)

WOODS

Balsam, Yellow, 421	Clematis, 425
Bell-flower, Giant, 416	Corydalis, White climbing, 295
Bell-flower, Nettle-leaved, 416	Cyclamen, 529
Betony, Wood, 294	Figwort, Knotted, 417
Bluebell, Giant, 416	Foxglove, 284
Bluebell, Nettle-leaved, 416	Germander, Wood, 294
Bramble, 423	Golden rod, 421
Buckthorn, Alder, 203	Helleborine, Broad-leaved, 422
Burnet saxifrage, 420	Sage, Wood, 294
Centaury, Common, 338	Teasel, Wild, 541

HEDGEROWS

Basil, Wild, 433	Bryony, White, 218
Bedstraw, Hedge (Large), 428	Calamint, 432
Bedstraw, Lady's, 334	Catmint, 432
Bramble, 423	Clematis, Wild, 425

THE FLORAL YEAR

Crane's bill, Dove's-foot, 177	Honeysuckle, 234
Daisy, 127	Hops, 426
Dandelion, 129	Horehound, Black, 354
Deadnettle, White, 222	Mallow, Common, 348
Dock, Broad-leaved, 463	Mugwort, 540
Dock, Red-veined, 464	Nettle, Common Stinging, 311
Dock, Sharp, 464	Nettle, Roman, 313
Feverfew, 431	Nettle, Small stinging, 313
Figwort, Knotted, 417	Ox-tongue, Bristly, 316
Foxglove, 284	Parsley, Hedge, 462
Fumitory, Rampant, 317	Tansy, 539
Goosegrass, 314	Traveller's joy, 425

FIELDS AND MEADOWS

Bartsia, Red, 367	Liquorice, Wild, 332
Bedstraw, Lady's, 334	Mallow, Musk, 445
Bistort, 335	Marjoram, 485
Bugle, Yellow, 239	Meadowsweet, 385
Burnet, saxifrage, 420	Medick, Black, 236
Buttercup, Celery-leaved, 263	Milkwort, 339
Cat's-car, Long-rooted, 328	Nettle, Common stinging, 311
Centaury, Common, 338	Nettle, Roman, 313
Centaury, Yellow, 338	Nettle, Small stinging, 313
Chickweed, Field mouse-ear, 173	Orchis, Frog, 341
Clover, Dutch, 233	Plantain, Hoary, 337
Clover, Purple, 233	Plantain, Ribwort, 338
Clover, Strawberry, 438	Ragwort, 326
Crocus, Autumn, 531	Rest harrow, Common and Spiny, 482
Cyclamen, 529	Rock rose, 447
Daisy, 127	Saffron, Meadow, 531
Dandelion, 129	Self-heal, 445
Dewberry, 424	Snakeweed, 335
Dyer's green weed, 435	Spikenard, Ploughman's, 443
Felwort, 533	Tansy, 539
Feverfew, 431	Teasel, Fuller's, 542
Gentian, Autumnal, 533	Thistle, Scotch, 471
Gentian, Field, 533	Toadflax, Yellow, 438
Grass, Cock's foot, 322	Trefoil, Bird's-foot, 436
Ground pine, 239	Trefoil, Hop, 236
Harebell, 483	Trefoil, Strawberry, 438
Hawkbit, Autumnal, 443	Vetch, Sweet milk, 332
Hawkbit, Rough, 327	Vetchling, Yellow, 331
Lady's Mantle, 239	Yarrow, 441

CULTIVATED GROUND

Bartsia, Red, 367	Chickory, 453
Bindweed, Black, 455	Chickweed, Small, 99
Buckwheat, 465	Corn cockle, 452
Buckwheat, Climbing, 455	Crane's bill, Dove's-foot, 177
Campion, White, 369	Daisy, 127

SEPTEMBER TO DECEMBER

- | | |
|---|---|
| <p> Dandelion, 129
 Deadnettle, Red, 179
 Dodder, Flax, 452
 Feverfew, Corn, 431
 Flax, Common, 450
 Fluellen, 454
 Fumitory, Common, 358
 Goosefoot, Red, 466
 Goosefoot, White, 536
 Groundsel, 98
 Heartsease, 246
 Hempnettle, Red, 455
 Knapweed, Great, 366
 Knotgrass, 465
 Madder, Field, 181
 Marigold, Corn, 365
 Marjoram, 485
 Mayweed, Scentless, 365
 Mayweed, Stinking, 364
 Mercury, Annual, 468
 Mint, Corn, 537
 Nightshade, Black, 453
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SEED-TIME AND HARVEST

While the earth remaineth, seedtime and harvest, and cold and heat,
and summer and winter, and day and night shall not cease.

Genesis viii, 22

Are the pyramids of apples and of pears piled ready,
And the plums that must lie flat in case their fulness breaks
So they lie upon a platter whose cold silver cools them?
Are they ready? Are they waiting for their pyramids to crumble?

The Fruit Gatherers: SACHEVERELL SITWELL

SEPTEMBER is the month of change — flowers now beginning to disappear through age or succumbing to early frosts, fruits beginning to ripen and the harvest commencing. Indeed September is the harvest month. Though its name denotes 'seven', that is because it was the seventh month of the old Roman year. In Charlemagne's calendar it was called the harvest month. The first month of the French Republican calendar was *Vendémiaire*, the vintage month, which lasted from our September 22 to October 22; the last month of the Republican calendar was *Fructidor*, the fruit month, which lasted from August 18 to the beginning of *Vendémiaire*. So the present-day September corresponds partly to the French Republican fruit month and partly to the vintage month. To the Anglo-Saxons September was *Gerstmonath*, the barley month.

September is certainly the main harvest month, though it must be borne in mind that many fruits are gathered at other times of the year, and almost throughout the year certain wild plants are in fruit. But this harvest month recognises the final harvesting for the year. So now much depends on the weather, for the harvest can be affected by weather as

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much as the growth and well-being of the living plants themselves. In September we need fine weather to ripen and keep dry the grain which is to be gathered. And the weather during September is usually fine, though not always; the September of 1946 for example was the worst during the twentieth century, and much of the harvest was either ruined by rain, rendered unfit for gathering in or even flooded out of existence altogether. In many parts, especially in the West, gales blew off the ripe apples, thus bruising them and rendering them unfit for storing. (Even in August the continuous wet weather caused the ripe plums to rot on the trees.)

But it will serve no useful purpose to dwell on this. It is true that for farmers, fruit-growers and other agriculturists and horticulturists September is an anxious time; but taken over a long period of years September weather is suitable for harvesting. This may prove cold comfort for a farmer during a depressing September, but there seems little that one can do about it.

HARVEST FESTIVALS

Though we are here primarily concerned with wild plants, it would seem that this season of the year is so important as to demand that we



"The Times"

HARVESTING OATS IN KENT





pause for a while and consider what is meant by harvest. It is the gathering of the last fruits of the earth. Cherries were ripe in July, plums in August, currants, strawberries, raspberries, and so forth have long found their way into the bottle or jam pot if they have not already been consumed. The hop-pickers, too, were busy during August, though the hopping season frequently extends into September. Many other fruits and vegetables have by now come and gone. But this is the final gathering of crops, so now is the time for harvest thanksgiving and harvest homes.

Harvest has, since time immemorial, been a season for rejoicing, so no wonder much superstition has grown around it. Those who are interested in the folk-lore and even magic of harvest time would do well to read the exhaustive review of harvest cults and customs in Sir James Frazer's *Golden Bough*.

Cereals, which form the bulk of our agricultural harvest, derive their general name from the Roman ceremonial Ceralia, held in honour of Ceres, the goddess of corn. In the time of the Druids, harvest was celebrated on November 1 — rather a late date for these islands. The English before the sixteenth century observed Lammas Day as the festival for the wheat harvest. This was held on August 1 (Old Style) which was much earlier than the Druids' festival. But then on Lammas Day it was the first fruits of the harvesting season which were recognised. Each member of the congregation presented to the church a loaf of bread made from the first lot of wheat gathered; in fact, the term Lammas is derived from the Old English *hlafmaesse* — that is, *hlaf*, loaf, and *maesse*, mass.

Now in these 'enlightened' days, many of the celebrations connected with harvest have passed away. The old harvest home, when all the harvesters foregathered for a good time after all had been safely gathered in, is celebrated only in the remoter parts of the country, and even there it seems to have lost much of its former picturesqueness and significance. Well do I recall attending as a boy in 1922 a harvest home in a remote part of Dorset. After the last sheaf of corn had been safely stored, everybody, men, women, boys and girls, met at the farmer's house. What a spread was there in the enormous, stone-flagged farmhouse kitchen! There was an old cauldron suspended over a fire burning on stone flags in a fireplace itself as big as a modern kitchen. On the long table, stretching from one end of the kitchen to the other, were all sorts of things to eat — several meats, poultry, huge cheeses, pickles, fruits, and so on, all to be washed down by home-made cider. Everything was made or prepared on the farm. Even the white bread was home-baked — cottage loaves two feet high — and delicious hot griddle cakes. After eating our fill, we all repaired to the farm parlour to dance to a fiddle. Many of those country dances were strange to me, but how those folk enjoyed themselves!

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For now, the corn house filled, the harvest home,
Th' invited neighbors to the husking come ;
A frolic scene, where work and mirth and play
Unite their charms to cheer the hours away.

The Hasty Pudding : JOEL BARLOW

But everything today must, it appears, be communal, so it is good at any rate to note that the churches are keeping up their harvest festivals. They recognise no special date, however, though most of them choose the month of September for their harvest thanksgiving.

Haulms burn
in distant fields :
reluctantly the plumes of smoke
rise against the haze
of hills blue and clear
but featureless.

Our feet
crush the crinkled beech-leaves
There is no other life than ours
God is good to us this September evening
to give us a sun
and a world burning its dross.

Let us burn the twisted years
that have brought us to this meeting.
The crops are culled —
we can expect no other fruit
until another year
brings fire and fealty and the earth in barren stillness.

September Fires : HERBERT READ

TREES IN FRUIT

Season of mists and mellow fruitfulness,
Close bosom-friend of the maturing sun ;
Conspiring with him how to load and bless
With fruit the vines that round the thatch-eaves run ;
To bend with apples the moss'd cottage-trees,
And fill all fruit with ripeness to the core.

To Autumn : KEATS

The fruits of most trees in Britain are now available for study, though some of them have been developed for some weeks (the tree of heaven, for example, began to display its young fruits in July, but they are now mature, p. 415) : those of the elm (p. 93), sterile though they were, disappeared very early in the summer, and those of lime (p. 414) and cherry (p. 415) were quite ripe in July and have now gone.

The fruit of the oak takes the form of the familiar acorn which varies somewhat according to species. In general, however, the acorn is an

SEPTEMBER TO DECEMBER

ovoid structure enveloped at its base in a cup known as the cupule which has developed from the original floral bracts (p. 145). It is viable for one year only.

Though acorns are relished by many animals as an article of diet, they are no longer eaten by man, though in some countries they are used for making various food substitutes. During the Second World War, for example, crushed dried acorn was the only material available in certain Continental countries as a sort of *ersatz* coffee — and a very bad substitute it was. The Ancient Britons, however, used to eat acorns in their natural state, and so also did the Romans and the Greeks.

Acorns were good until bread was found.

Colours of Good and Evil: BACON

Between the two common oaks (*Quercus pedunculata* and *Q. sessiliflora* (durmast oak)) there is one important distinction: that is, the female flowers of *Q. sessiliflora* have no stalks (p. 145), whereas those of *Q. pedunculata* are borne on long stalks. This characteristic is reflected in the fruit. Furthermore, the acorns of *sessiliflora* taper more acutely than do those of *pedunculata*. The acorns of the Turkey oak (*Q. cerris*, p. 143) have a very beautiful cupule covered in mossy green scales. These acorns take two years to ripen.

Now is the time also to look for 'oak-apples'. These are excrescences which may appear on either stems or leaves — mainly the former. Each is more or less spherical. The growth has been stimulated by the presence of the larvae of a species of gall-wasp. The eggs are laid by the gall-wasp in the tissues of the stem or leaf, and then abnormal development of tissues begins around the eggs eventually producing a young gall which is at first green. Inside the tissue of the gall the eggs hatch and then the



ACORNS

Left to right, common oak (*Q. pedunculata*), Turkey oak (*Q. cerris*),
common oak (*Q. sessiliflora*)

larvae start feeding on the gall tissue around them. This tissue in due course becomes reduced to a powdery mass and the entire gall has assumed a light brown colour. When the larvae are mature they eat their way out of the gall, leaving clean, circular perforations behind them.

'Oak-apple' or 'Royal Oak' Day falls on May 29; but it is seldom recognised now. Charles II was born on that day in 1630. In 1651, he was defeated by Cromwell's men at Worcester and during his escape which followed he hid in an oak tree at Whiteladies near Boscabel House. He eventually reached France, whence in due course he returned to England on his birthday and was met by his Royalist friends who for the occasion had bedecked themselves with sprays of oak. From that day onwards the anniversary was celebrated by wearing twigs bearing 'oak-apple' galls.

September is also the month for ripe 'conkers' — the fruit of the horse-chestnut (*Aesculus hippocastanum*, p. 196). Though the huge palmate leaves are still on the tree, the fruits are ripe, and it is sometimes quite disturbing to be near a horse-chestnut tree and listen to the heavy fruit falling to the ground — and dangerous too, for their spiny coats (p. 569) might inflict a painful wound.

The ovary of the horse-chestnut is three-chambered, and though each chamber contains two ovules, seldom, if ever, do they all reach maturity; in fact each fruit usually contains only one or two ripe seeds. Sometimes one or more atrophied specimens may also be present. Each seed is comparatively large and is the dark red 'conker' so popular with boys. In each fruit the one or two seeds are surrounded by a thick fruit-wall having the appearance and consistency of white cotton-wool inside and tough, green and spiny outside.

The sweet or Spanish chestnut (*Castanea sativa*, p. 414) is a totally different tree. The female flowers are borne in groups of two or three, each group being surrounded by a scaly cupule. After fertilisation, the ovary develops to form the familiar brown nut, and then the cupule enlarges to produce a tough, very spiny covering to the group of two or three developing nuts (p. 569). Unfortunately, since the flowers bloom so late in the year (p. 414), though fertilisation has occurred there is little time left for the fruit to attain maturity before weather conditions set in, rendering this impossible.

The ripe nuts are eventually exposed by the splitting of the spiny cupule. These nuts were at one time relished in Britain as an article of diet either in their natural state or roasted or chopped up in seasoning. Today they are not so popular, though towards Christmas-time they appear in the shops, and during the winter months one still sees, especially in the London streets, the roasted chestnut barrows. In certain Mediterranean regions, however, sweet chestnuts are still cultivated extensively for food, particularly in Italy and Spain.

SEPTEMBER TO DECEMBER

The fruits of the beech (*Fagus sylvatica*, p. 145) are analogous to those of the sweet chestnut. They take the form of three-sided brown nuts surrounded by a bristly cupule (p. 569). When ripe the cupule splits from the top downwards and thus exposes the nuts. Children sometimes eat these nuts, but they are not very palatable and therefore not popular. Collectively they are called 'mast' (as also acorns sometimes are) and (also like acorn 'mast') they are frequently fed to pigs. Wild animals, such as squirrels, mice and certain birds feed on them too. They have a high oil or fat content (17 to 20 per cent), and in certain regions on the Continent this oil is extracted and used as a cooking fat or as a substitute for butter.

The fruit of the walnut (*Juglans regia*, p. 77) is not a nut at all but a drupe, like that of the plum. The seed is surrounded by a thick fruit-wall which is divided into an outer, thick, fleshy green layer and an inner, corrugated woody layer. When ripe, the outer layer turns black and decays, so in due course the seed surrounded by the familiar corrugated woody layer is exposed and eventually drops to the ground. Frequently, however, it does not get the chance to do this, for long before it reaches maturity, that is, during June, the unripe fruit is gathered for pickling. At this time the entire fruit is still comparatively soft, for the hard woody layer has not yet become differentiated. In the ripe fruit the seed itself consists of two fleshy white lobed cotyledons which are surrounded by the woody layer. These cotyledons are separated by a membranous layer bitter to the taste. Sometimes a cross-septum is also present.

The walnut seed has a high food content, especially of oil which, mainly in France, is extracted for the making of paints.

There is an old adage that ripe walnuts should not be hand-picked from the trees, but that they should be beaten down. This rough method of gathering the fruit is supposed to be good for the tree itself.

A woman, a spaniel, and a walnut tree,
The more you beat them the better they be.

Many Londoners must be familiar with the fruits of the London plane (*Platanus acerifolia*, p. 64), hanging as they do like spiny tassels from the branches (p. 569). Both male and female flowers are borne in dense spherical heads on long pendulous stems. After fertilisation the head of each female flower enlarges into a sphere covered with spicules. When quite ripe, the fruiting head falls apart and then the hairy fruits escape and are disseminated by the wind.

There is a certain amount of evidence supporting the view that a plane tree is unhealthy to live near. The spicules from the fruits are in due course shed and then they may swarm in the air surrounding the tree. If many of these spicules are inhaled over a long period of time they may cause bronchial catarrh or other throat infections and even pneumonia.

But usually the wind is sufficiently strong to ensure that the spicules do not swarm in one place too long.

Now we come to some of the winged fruits of trees, among which is the familiar ash (*Fraxinus excelsior*, p. 146). Ash fruits are in evidence very early in the fall, in fact, long before many other fruits are ripe; but they are still to be seen on the boughs during September, so this is the most convenient time to examine them. They take the form of samaras (p. 30); a number of such samaras hanging in a cluster are popularly known as 'keys' (p. 569). The structure of the samara has already been described on p. 30. The slightly twisted wing is useful for dispersal by wind; in fact this method of wind dispersal is particularly effective, explaining the presence of ash trees in almost inaccessible places such as high mountain ledges and crevices. As indicated on p. 146, some ash trees bear only male flowers; these will, of course, bear no fruit. It is an extraordinary fact that, in general, the ash bears fruit in inverse proportion to the luxuriance of its foliage.

The Ancients used ash 'keys' both as a food (pickled and eaten with salads) and as a medicine. But neither the nutritional value nor the medicinal virtues are of much account.

The fruits of maples and sycamore are very similar, which is not surprising since all these trees are closely related in the same genus *Acer*. The fruit takes the form of a double samara (sometimes it is even triple, and even on occasions quadruple). The double samara of the common or field maple (*Acer campestre*, p. 197) is illustrated on p. 569. The wings of the two seeds are of a light-green colour early in the season, but towards the end of September they begin to turn various shades of pink and red and eventually brown when they are quite ripe. The samaras of maple are also called 'keys', and in some parts of the West Country the children call them 'hooks and hatchets'.

The double samaras of the sycamore or great maple (*A. pseudoplatanus*, p. 198) are larger than those of the field maple and hang in more pendulous branches.

The winged fruits of the hornbeam (*Carpinus betulus*, p. 198) are particularly attractive (p. 569). As described on p. 198, the female flowers hang suspended in loosely constructed catkins. Each flower of the catkin is subtended by a three-lobed bracteole and each pair of flowers is suspended by a larger bract. Early in the season this bract is shed, and then the two bracteoles become considerably enlarged. Thus we have pairs of three-lobed bracteoles, and, after fertilisation, at the base of each bracteole there is a fruit which, by September, is of a woody texture. The bracteole acts as a very efficient wing for wind dispersal.

The female flowers of the birches (*Betula alba* and *B. pubescens*, pp. 117, 199) are borne in catkins composed of many bracts, each of which subtends two or three flowers. After fertilisation, the fruits develop in the form of



FRUITS OF TREES

A, ash ; B, hornbeam ; C, horse-chestnut ; D, sweet chestnut ; E, birch ;
 F, London plane ; G, beech ; H, field maple ; I, alder ..

minute nuts, each of which is surrounded by a flattened layer of tissue. By September the fruit (still in the catkins, p. 117) is ripe and then the bracts are shed, thus exposing the fruits which, by virtue of the wing-like tissue, are easily dispersed by the wind.

The alder (*Alnus glutinosa*, p. 77) belongs to the same family as the birches (BETULACEAE, Dicot.), and neither alder nor birch bears fruit until it is about twenty years old. Alder comes into fruit very late in the year, in fact, it is one of the last of our trees to lose its leaves. The fruits are frequently not ripe until October or even November. The female catkins, though fundamentally similar to those of the birch, are smaller, ovoid in shape and almost erect. After fertilisation, however, they enlarge and become more pendulous. Whereas the bracts of the birch are deciduous, those of the alder are not, so they gradually become dark and woody and persist on the tree long after the fruits have been dispersed. The fruits are not winged as those of the birch are, but they contain many air bubbles which render them buoyant. This is particularly useful in this case, for alders frequently grow near water and so the seeds are well adapted for dispersal by this medium.

The fruits of the rose family (ROSACEAE, Dicot.) include plum, apple, pear, white beam, wild service, rowan and true service, among trees. Other members of the family, such as sloe and hawthorn, though these frequently assume the habit of trees, are more often found growing in the hedgerows, so consideration of these will be deferred until later (p. 572).

The fruits of the wild apple, wild pear, white beam, wild service, rowan and true service are all pomes (p. 34), whereas that of the wild plum is a drupe (p. 33).

The wild or crab apple (*Malus pumila*, p. 193) is the progenitor of all cultivated varieties of apple. The fruit is comparatively small and may be either red or yellow. It is very acid to the taste, since it contains a high percentage of malic acid. It is of little nutritional value, and its vitamin content low. But it makes excellent jelly. The wild crab is sometimes used for making cider, and certain varieties are cultivated for this purpose. An acid liquor, verjuice, sometimes used for various culinary purposes, is obtained by the fermentation of crab-apple juice. In earlier times, crab apples were roasted and served in various hot punches:

And sometime lurk I in a gossip's bowl
In very likeness of a roasted crab,
And when she drinks, against her lips I bob
And on her wither'd dewlap pour the ale.

A Midsummer Night's Dream, Act II, Sc. 1: SHAKESPEARE

The wild pear (*Pyrus communis*, p. 194) is rather rare, so it will not be easy to examine its fruit. It is, however, a smaller version of the cultivated varieties, yellow in colour. The grittiness of the flesh is due to many

groups of microscopic woody cells embedded in it. These are called stone cells.

The fruits of the white beam (*Sorbus aria*, p. 194) are borne in clusters as the flowers are. They are bright red in colour, and though they look superficially like berries, they are actually small pomes. They are eaten by many wild animals, but to man they are palatable only when, like those of the medlar, they are beginning to decay. In parts of the north of England they are called chess apples.

The fruits of the wild service (*Sorbus torminalis*, p. 194) are similar to those of the white beam, though smaller. They are rather dry, however, but like those of the white beam, are palatable when about to decay, especially after subjection to frost.

The clusters of bright red rowan or mountain ash (*Sorbus aucuparia*, p. 194) fruits are too conspicuous at this time of the year to be missed, especially in the north of England and Scotland. Each fruit is a small pome, beginning small and green, then as it develops turning yellow and eventually bright red. Birds love rowan fruits, and in this way the seeds contained in the pomes are widely dispersed, being passed out with the bird's excreta. The fruits are used for making birdlime. (The specific name *aucuparia* is from the Latin *aucupium*, bird-catching, because the fruit extract is supposed to inflict the bird with vertigo.) Rowan pomes are not very palatable to man, though in some north European countries they are eaten in their natural state. There is an old Scottish recipe for making a marmalade from them. John Evelyn, the diarist (1620-1706), wrote :

the juice of the berries [*sic*], which fermenting of itself, if well preserved, makes an excellent drink against the spleen and scurvy. Ale and beer brewed with these berries when ripe, is an incomparable drink, familiar in Wales.

The fruits of the rare true service (*Sorbus domestica*, p. 196) are larger than those of rowan, frequently pear-shaped, and of a speckled, reddish-brown colour.

The uncommon wild plum (*Prunus domestica*, p. 147) presents fruits in the form of drupes (p. 33). They appear fairly early in the season, frequently during August.

HEDGEROW FRUITS

During September, the familiar hedgerow fruits begin to make their appearance, in due course presenting splashes of colour — mainly orange and red.¹

Of the two rosaceous trees which frequently assume a more bushy habit in hedges, the blackthorn or sloe (*Prunus spinosa*, p. 122) is an

¹ Some of these are figured in colour in *Trees in Britain* (Plate 7).

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exception to the usual rule in that its fruits are black covered with a bloom like a black grape. Furthermore, they appear very early — sometimes in August, but more often in early September. The blackthorn fruit is a typical drupe (p. 33). In its young stages it is very dry and sour, but when quite ripe it is sweet and palatable. It is used for making jellies and also the liqueur sloe gin. It is a valuable nutrient, since its mineral content is high — much higher than that of the cultivated plum for example.

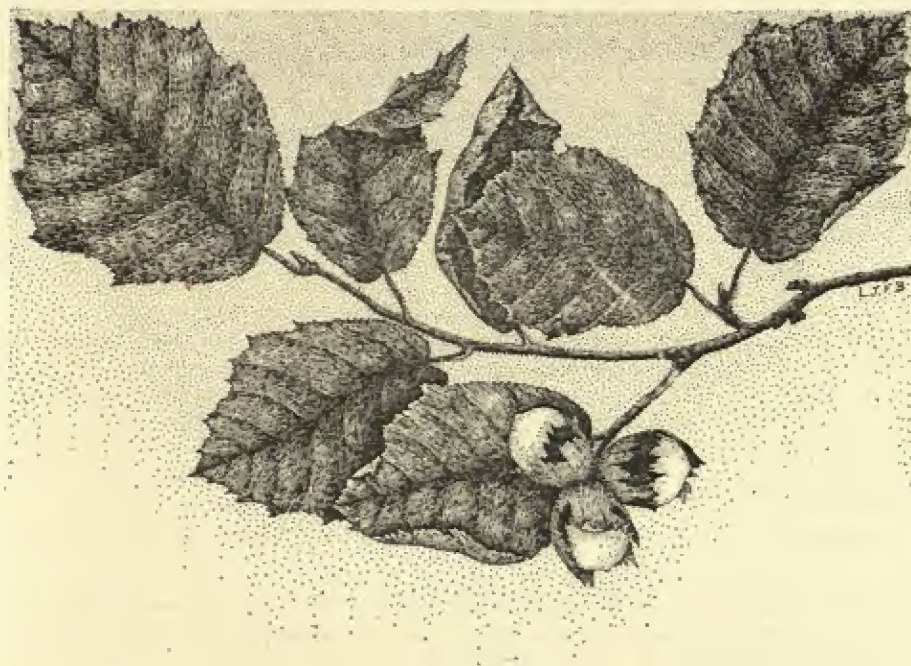
The other rosaceous tree which, even more frequently than the blackthorn, assumes a bushy habit in our hedgerows is the hawthorn or may (*Crataegus monogyna* and *C. oxyacanthoides*, p. 191). It is usually the species *oxyacanthoides* which grows in hedgerows; *monogyna* being more or less confined to woods. The fruits of the hawthorn (sometimes called a 'haw') is composed of one stony seed surrounded by a part of the floral receptacle which has become somewhat fleshy. This is green at first and then it eventually turns dark red. When these fruits are abundant they make a striking effect. Birds eat them and thus assist in the dispersal of the fruits; but they are not very palatable to man, though children sometimes eat them, and in the United States they are not uncommonly used for making jellies.

Even today many people believe that if there are many hawthorn



HAWTHORN FRUITS

Eric J. Hosking



HAZEL FRUITS

'haws' and rose 'hips' (p. 576) about in September, then a hard winter lies ahead, in spite of any lack of scientific confirmation.

The thorns and briars, vermillion-hue,
Now full of hips and haws are seen ;
If village prophecies be true,
They prove that winter will be keen.

Autumn : J. CLARE

There are several other trees which frequently occur, either coppiced in woods or in the form of bushes in hedgerows, and among these one of the most common is the hazel (*Corylus avellana*, p. 76). Towards the end of September the familiar fruits, in the form of nuts, begin to ripen. They are borne either singly or more often in clusters of two to five. Each nut is composed of a seed (the edible kernel) surrounded by a hard fruit-wall (the woody shell). The whole is cupped in a leafy cupule which has developed from the floral involucre (p. 87). Barcelona nuts, cobs and filberts are cultivated varieties of the wild hazel.

The hazel nut is very palatable and nutritious, because it has a high oil or fat content. It is relished not only by man but also by birds and small mammals, which thus distribute them.

THE FLORAL YEAR

. . . but the hazels rose
Tall and erect, with tempting clusters hung,
A virgin scene! A little while I stood,
Breathing with such suppression of the heart
As joy delights in; and wise restraint
Voluptuous, fearless of a rival, eyed
The banquet.

Nutting: WORDSWORTH

The elder (*Sambucus nigra*, p. 278) is also a common hedgerow shrub or small tree. Its fruits, like the flowers, are borne in large clusters. Each fruit is a true berry containing three to six seeds. It is green at first, then it turns red and finally deep purple. The fruit is neither palatable nor very nutritious, though some claim that it has a certain medicinal virtue as a protective food, and in this connexion may be eaten either raw or in some sort of confection. Elderberry wine was at one time popular, especially among country folk.

Belonging to the same family as the elder (CAPRIFOLIACEAE, Dicot.) are the wayfaring tree (*Viburnum lantana*, p. 202) and the guelder rose (*V. opulus*, p. 283). Their fruits ripen during September, though they are not so common as those of the elder, since the plants only grow singly or in small groups. Both produce their fruits in large conspicuous clusters. They are true berries. Those of the guelder rose are dark red and those of the wayfaring tree first bright red and eventually purplish-black.

The fruits of the dogwood or cornel (*Cornus sanguinea*, p. 280) are also borne in large clusters. They are black in colour. Each fruit is a drupe usually containing one seed only. This has a particularly bitter taste.

The spindle tree (*Euonymus europaeus*, p. 201), though not very common, is interesting and attractive. But the fruits are late in appearing, seldom displaying their brilliant colours before October or even November. Each fruit is pink and divided into four lobes. When the seeds are ripe, the four pink lobes open out displaying four seeds, each of which is surrounded by an orange-coloured aril.

The two buckthorns are also fruiting during September. Alder buckthorn (*Rhamnus frangula*, p. 203) bears clusters of small black drupes each containing several stones. The drupes are green during the young stage, and at this stage a dye can be extracted from them. In olden days this dye was used for calico-printing. Later the drupes turn red and eventually black.

The fruit of the purging buckthorn (*R. catharticus*, p. 203) is larger than that of the alder buckthorn. It contains four stones. It is green when first formed and then yields a green dye; but when it is ripe it is black. The ripe fruits were at one time used for the preparation of a purgative,

SEPTEMBER TO DECEMBER

but it was very strong and soon gave place to the less violent cascara sagrada, which is prepared from the bark of another buckthorn, the American *Rhamnus purshiana*.

The very familiar fruits of the holly (*Ilex aquifolium*, p. 200) are drupes, not berries. Though they are already beginning to don their red hue in September they will be considered later when our thoughts are turning to the Christmas festivities in which certain evergreens play an important part.

Several shrubs and bushes contribute through their coloured fruits to the gaiety of the autumn hedgerow, and among them are two more members of the rose family (ROSACEAE, Dicot.), namely the wild (dog) rose (*Rosa canina*, p. 303) and the blackberry (*Rubus fruticosus*, p. 424). The fruits of both these plants are large and distinctively coloured so that birds are attracted to them (p. 576).

The fruit of the blackberry is really a collective one, being composed of many small drupes (described on p. 33). Though the main flowering season is July and August, flowers often continue to appear well into September; there is also a long fruiting season, so that during September



RIPE AND UNRIPE FRUITS OF BLACKBERRY

Inset, collection of fruits in section



FRUITS OF WILD ROSE

Inset, receptacle of achene in section

it is quite common to find flowers, unripe fruits and ripe fruits on the same plant, even the same spray. When first formed, the fruits are hard and green, then as they fill out they turn red and in due course black and luscious. As an article of diet this delicious fruit is well known.

The wild rose is a delight to the eye in the month of September, for by now, though the rose 'hips' (as the fruits of the rose are called) are red and ripe, the leaves still bedeck the plant, and sometimes even they are bright red. The botanical nature of the 'hips' was described on p. 29. The many carpels of the flower are partially sunk in a hollow receptacle. After fertilisation each carpel forms a small hard fruit covered with stiff bristles. It is an achene. As the achenes ripen, the green receptacle swells around them and this eventually turns bright red. The other wild roses and the cultivated roses also bear 'hips', some of which are much larger than those of *Rosa canina*, some being more spherical and some black in colour (p. 254).

Rose 'hips' are valuable because they have a very high vitamin C content. Nowadays rose-hip syrup is produced from them, and this is an excellent protective food, especially for growing children. In fact, though black currants are (quite rightly) strongly recommended for their high vitamin C content, rose 'hips' contain two and a half times as much

vitamin as black currants, and eight times as much as oranges. The protective quality of rose 'hips' has been known for centuries, but advantage has not been taken of the fact except in North European countries and curiously enough, according to Sir Arthur Keith, in Neolithic Britain — two thousand years before Christ.

The blackthorns hung with clinging sloes
Blue-veiled in weather coming cold,
And ruby-taselled shepherd's-rose
Where flock the finches plumed with gold,
And swarming brambles laden still
Though boys and wasps have ate their fill.

Wilderness: EDMUND BLUNDEN

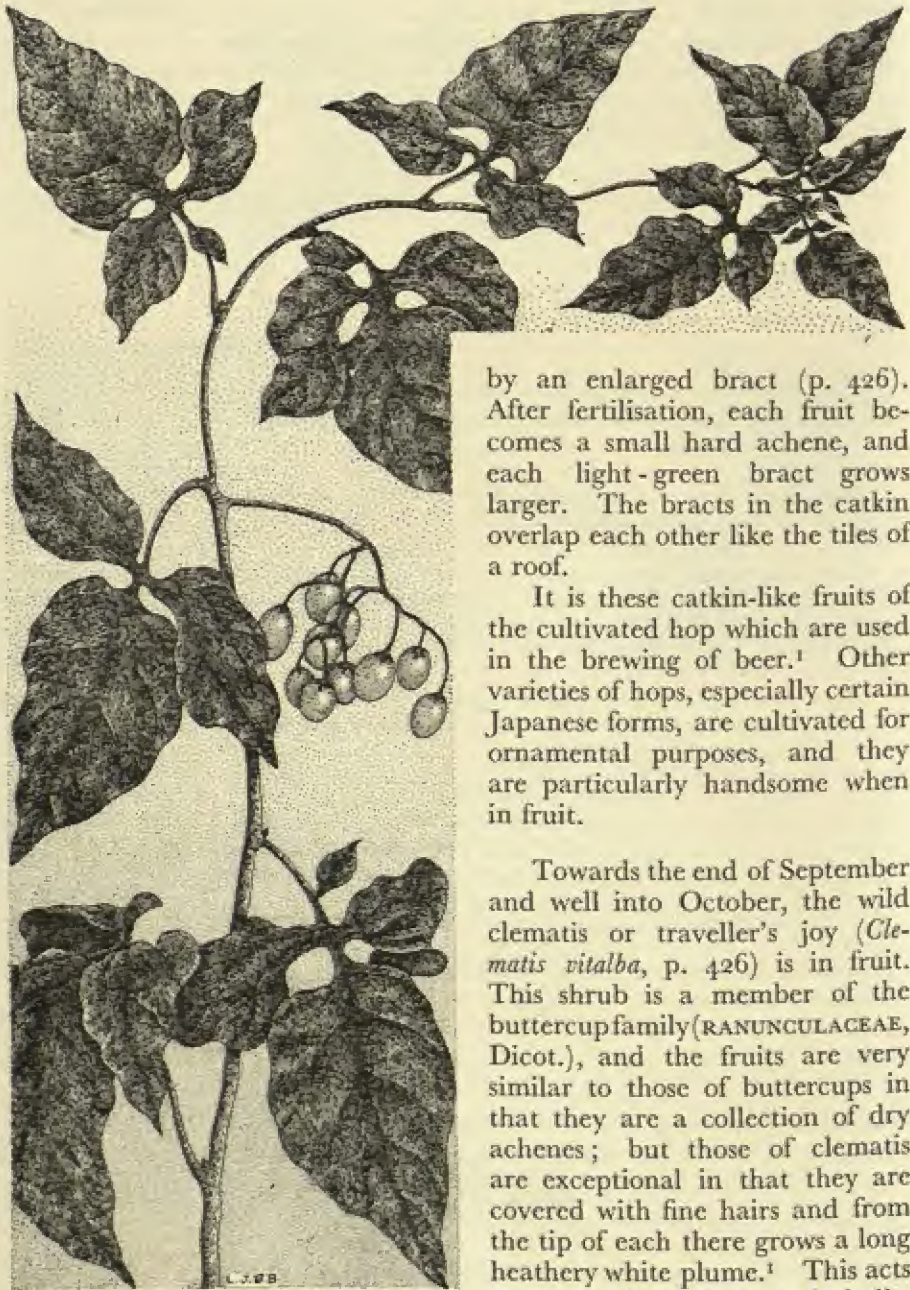
We have now considered several wild fruits among which are some well known to be edible, whereas others, though nutritious, are not much appreciated these days. It is interesting to note that Dr. M. Burton states that "the most delectable jam is made with a mixture of blackberries, elderberries, sloes, crab apples, hips, haws and rowanberries".

Now there are several other shrubs and bushes whose gaily coloured fruits contribute largely to the beauty of the hedgerows during September and onwards, though their fruits are not palatable to man — indeed some are poisonous.

Among these are the fruits of the two bryonies — the black bryony (*Tamus communis*, p. 220) and the white bryony (*Bryonia dioica*, p. 220) — two plants which, despite their names, are in no way related to each other. The fruits of both of them are poisonous red berries. They festoon the hedges, frequently in gay abandon, and although those of the black bryony are somewhat larger, it is not easy to distinguish between them unless the leaves are still present. These usually are, of course, during September and October; but the berries persist long after that.

During September, the scrambling woody nightshade or bittersweet (*Solanum dulcamara*, p. 306) presents its fruits in the form of hanging, bright-red berries which are weakly poisonous (p. 578). They are yellow when young, and turn red as they ripen. During September, groups of both flowers and fruits may be found, and in any event there is no mistaking these fruits even well into October because the characteristic leaves are still present. The alternative common name, bittersweet, and the specific name, *dulcamara*, indicate that the fruits are bitter when unripe and sweet when ripe.

Here and there, hops (*Humulus lupulus*, p. 426) are now festooning the hedges, and their beautifully shaped leaves (p. 427) and their magic-lantern, light-green fruit catkins are surely a pleasing sight. The female catkins are composed of flowers each having a single ovary subtended



FRUITS OF WOODY NIGHTSHADE

by an enlarged bract (p. 426). After fertilisation, each fruit becomes a small hard achene, and each light-green bract grows larger. The bracts in the catkin overlap each other like the tiles of a roof.

It is these catkin-like fruits of the cultivated hop which are used in the brewing of beer.¹ Other varieties of hops, especially certain Japanese forms, are cultivated for ornamental purposes, and they are particularly handsome when in fruit.

Towards the end of September and well into October, the wild clematis or traveller's joy (*Clematis vitalba*, p. 426) is in fruit. This shrub is a member of the buttercupfamily (RANUNCULACEAE, Dicot.), and the fruits are very similar to those of buttercups in that they are a collection of dry achenes; but those of clematis are exceptional in that they are covered with fine hairs and from the tip of each there grows a long heathery white plume.¹ This acts as a parachute during wind dispersal (p. 35). When quite ripe,

¹ *Flowers in Britain*, p. 170.



a complete head of fruits is therefore very striking, having a white, beard-like appearance — hence the alternative common name, old man's beard. Where clematis grows profusely (mainly in chalky regions) the hedges appear to be smothered with it.

The trailing wreaths of honeysuckle (*Lonicera periclymenum*, p. 309) will be fruiting towards the end of September and onwards. The fruit is a bright-red spherical berry. There should be no difficulty in identifying honeysuckle berries for they are borne in very close clusters of about six to twelve, and in any event the leaves are present well into November. The berries are poisonous.

Most of the fruits of the herbaceous hedgerow plants will by now have disappeared; but provided there has been no sharp frosts, the conspicuous red berries of the wild arum or cuckoo-pint (*Arum maculatum*, p. 160) might still be discovered tucked away in the protection of the hedge canopy. These were described on p. 161.

FRUITS OF MOUNTAIN AND MOORLAND

Among the plants of heaths, mountain and moorland, two stand out because they have conspicuous fruits, namely, bilberry and cranberry. Both belong to the same family (VACCINIACEAE, Dicot.).

The bilberry or whortleberry (*Vaccinium myrtillus*, p. 253) bears a black, glaucous fruit which is a true berry. This is edible and very palatable.



FRUITS OF WILD CLEMATIS

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The cranberry (*Oxycoccus quadripetalus*, formerly *Vaccinium oxycoccus*, p. 482) bears red fruits which also are true berries. These also are edible, and make delicious pies. The very popular American cranberry (*O. macrocarpa*), also known as the huckleberry, is much larger. It does not grow in this country. The fruit of the less common cowberry (*Vaccinium vitis-idaea*, p. 373) is very like that of the cranberry. In fact the two plants are very similar.

This brings us to the end of those autumn fruits for which space will allow of description. Only those which are of particular interest have been chosen here; but it must be emphasised once more that throughout most of the year — at any rate from February until November — there are many plant fruits to be seen in the countryside. Most, of course, are of herbaceous plants, and they follow the flowering stage so quickly that they have been described in the appropriate floral season.

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AUTUMN TINTS AND LEAF-FALL

Though summer goes, remember
The harvest fields;
The colour-work of autumn
And what it yields.

To One Who Fears Old Age: F. H. ADLER

All things brown, yellow, and red, are brought out by the autumn sun, the brown furrows freshly turned where the stubble was yesterday, the brown bark of trees, the brown fallen leaves, the brown stalks of plants, the red haws, the red unripe blackberries, red bryony berries, reddish-yellow fungi; yellow hawkweed, yellow ragwort, yellow hazel leaves, elms, spots on lime or beech; not a speck of yellow, red or brown the yellow sunshine does not find out.—RICHARD JEFFERIES

OCTOBER sees the end of most of this year's flora and ushers in preparations for winter's sleep, one of the first being a profound change in foliage of herbs, shrubs and trees other than evergreens (p. 589).

As its name indicates, October was the eighth month of the old Roman calendar which begins in March. The Anglo-Saxons had two names for it: *Wyn Monath*, or wine month, and *Winterfylleth* (or *Winterfyllith*), indicating that the first winter moon (*Fylleth*) appears during the month:

Winter fyllith appellabant composito novo nomine ab hyeme et plenilunis quia videlicet a plenilunis ejusdem mensis hyems sortiretur initium.

De Temporum Ratione: BEDE

SEPTEMBER TO DECEMBER

The Slavs refer to October as the 'yellow month', thus reflecting the appearance of autumn tints which are mainly yellow.

In the golden glade the chestnuts are fallen all ;
From the scrod boughs of the oak the acorns fall :
The beech scatters her ruddy fire ;
The lime hath stripped to the cold,
And standeth naked above her yellow attire :
The larch thinneth her spire
To lay the ways of the wood with cloth of gold.

Out of the golden green and white
Of the brake the fir-trees stand upright
In the forest of flame, and wave aloft
To the blue of heaven their blue-green tuftings soft.

North Wind in October : R. BRIDGES

PLANT PIGMENTS

As indicated by Richard Jefferies, autumn is the season of yellows, reds and browns. Though there are still quite a number of flowers to be seen in October (provided there has not already been too many sharp frosts), autumnal coloration is dominated by deciduous leaves now nearing their doom. Before looking at these in closer detail, let us examine in general the phenomena underlying plant colours in general, not confining ourselves at this stage to autumn tints.

Few people can fail to be impressed by the remarkable display of colour that plants often show. In the petals of flowers, for example, almost every conceivable shade of colour is represented.

Before proceeding to consider colours, it will be interesting to examine those flowers, such as the snowdrop, many lilies, narcissi, etc., which are not coloured. The whiteness of some of these flowers is so pure as to be almost dazzling. Yet this is not due to any white chemical pigment present in the cells of their petals, for these are colourless and transparent. Therefore, on casual consideration, such petals, instead of being white, should be colourless and transparent like a sheet of glass. But the petal is not one continuous sheet of material. It is composed of hundreds of microscopically small, colourless cells. If a sheet of glass be laid flat it naturally appears transparent. If then the sheet be crushed to a fine powder, it is neither transparent nor colourless but white, and the finer it is crushed the whiter it becomes. This is due to the irregular reflection or scattering of light ; and it is this light-scattering by the hundreds of cells of the colourless petal that makes it actually appear white.

The colours of petals, on the other hand, are due to the presence within the cells of different coloured chemical pigments. Sometimes only one pigment is present. More often, however, several differently coloured

pigments are present in the cells, and then the shade of colour produced in the petal is the result of the mixing of these pigments.

The chemical nature of many flower pigments is fairly well understood, though botanists and chemists have still much more to discover. Most of the pigments so far known are classified into two groups — the anthoxanthins and the anthocyanins.

Anthoxanthins are all yellow pigments, and they are responsible for the yellow colour of many flowers and also certain vegetative organs of plants. Pure yellow flowers, such as daffodils and buttercups, owe their colour to the presence of anthoxanthins and carotene (one of the pigments present in the green leaf, p. 12).

Of much more common occurrence are the anthocyanin pigments. These appear in many chemical forms and combinations of colour. They are the main bases for the blue, red, purple and brown shades so familiar in Nature. There are many of them; so it is not possible to consider them all. A few, however, are worthy of mention. For example, pelargonin is the anthocyanin responsible for the bright-red colour of the petals of *Pelargonium* and *Geranium*, delphinin for the beautiful blue of *Delphinium* and *Aconitum*, cyanin for the striking cornflower blue, oenin for the blue-black of the skins of black grapes.

Many anthocyanins undergo changes in colour according to changes in certain conditioning factors. At one time the change was thought to be due to changes in acidity or alkalinity of the sap of the cells containing the pigment. For example, colour change in the anthocyanin present in the forget-me-not flower is very common. Normally the flower is blue, but when it is beginning to fade it frequently turns pink. Often in Nature, however, one comes across a pink forget-me-not flower which is quite fresh. Blue delphiniums, too, frequently turn pink when getting old. What causes such changes in colour is not yet clearly understood, though it is now known that it is not due solely to changes in acidity or alkalinity, though such changes are frequently effective. For example, if blue delphiniums or forget-me-nots are steeped in weak vinegar (acetic acid), they turn pink. Also, in some places, especially in rural Yorkshire, children are wont to place bluebells in ant-hills to turn the flowers pink. The colour-change is induced by formic acid secreted by ants.

Bright blues and reds are, as has already been seen, usually due to the presence of one special anthocyanin. But there are many mixtures of shades, for example, brown wallflowers. The colouring matter here is a mixture of anthocyanins, carotene and anthoxanthins. The purple colour of certain flowers is usually due to the presence of one anthocyanin only in neutral cell-sap — that is cell-sap which is neither acid nor alkaline.

The colour of the normal healthy green leaf is due to the presence of the colouring substance called chlorophyll — a complicated mixture which is closely associated with the plant's food manufacture (p. 12). We

still have much to learn about the details of the chemical and physical structure of chlorophyll; but this much we do know, that it is a mixture of four groups of substances, two green and two yellow, namely: (1) chlorophyll *a* (green); (2) chlorophyll *b* (green); (3) carotene (orange-yellow); (4) xanthophyll (pale yellow).

The green colouring matter is always being formed in a healthy leaf, and constantly being destroyed; but manufacture outpaces destruction during the growing season. Then as autumn approaches and the deciduous leaf begins to age, the reverse occurs. The two chlorophylls gradually disappear, but some of the carotene and some xanthophyll remain — the amount varying with the species of plant. Anthocyanins, also, are manufactured at this stage, chiefly from any foods still left in the ageing leaf. Among the autumn tints, the yellows are due to varying mixtures of carotene and xanthophyll, and the reds, browns and purples to different mixtures of anthocyanins.

AUTUMN TINTS

Many herbaceous plants which are still bearing leaves during October or even November begin to display autumn colours, though in most cases these are not very pronounced. But some species of dock and spurge, the graceful herb Robert (see quotation on p. 225) and the handsome dove's-foot crane's bill are exceptional in that their leaves turn a beautiful crimson shade.

Among the shrubs and scramblers, the blackberry stands out frequently with yellow and red autumnal foliage.

Certain species and varieties of grape (*Vitis*), though never found growing wild, must be mentioned here, for they are often cultivated for their beautiful autumn tints, which may be yellow, red or purple or a mixture of two or three of these. Neither can we ignore the cultivated Virginian creepers — *Parthenocissus tricuspidata*, with its pointed and deeply serrated simple leaves, and *P. quinquefolia* with its large compound leaves each divided into five leaflets. The foliage of both these lovely climbers turns to beautiful golden and scarlet shades in autumn. These creepers belong to the same family as that of the grape (VITACEAE, Dicot.).

But the mass colour effects to which we all look forward as autumn approaches are due mainly to the changing foliage of our deciduous trees, so October is the month for visiting woodlands and forest areas if only to enjoy the autumn tints. Of course, it is a matter of common experience that the intensity of autumn coloration depends to a considerable extent on what kind of weather has been experienced during the preceding months. If, for example, the summer has been a mediocre one followed by a humid and warm September, then the ensuing autumn tints are dull. If, on the other hand, there has been a warm, bright, dry summer, followed by a dry September with some crisp frosts, then we might expect the

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deciduous foliage to leave us in a blaze of colour. This is exemplified particularly in countries where there are more extremes of climate. In Canada, for example, where various species of maple abound, one sharp frost in September or early October will transform a sea of green into a fire of yellows and reds — a never-to-be-forgotten sight.

Assuming that there has been a 'good' season, let us survey the sylvan scene.

From ash and sycamore we can expect little. The ash is very dull, for though it is one of the last of the trees in Britain to don its foliage, it is one of the first to discard it again.

The tree, that showed no green till June,
October bares;

The Ash: WILFRID GIBSON

Furthermore, though on occasions the dying leaves effect a yellow hue, more often they merely droop and fall without displaying any spectacular colour change. The time when the ash sheds its foliage varies with the individuals.

Though other members of the genus *Acer* (especially in North America and Asia) present the most striking autumnal effects, sycamore or great maple does not; moreover, like the ash, it sheds its foliage early in the season. Having a high sugar content, the leaves frequently exude a sticky sweet sap. This was described by John Evelyn in no uncertain terms:

The Sycamore is much more in reputation for its shade than it deserves; for the honey-dew leaves, which fall early, like those of the Ash, turn to noxious insects, and putrefy with the first moisture of the season; and are therefore, by my consent, to be banished from all curious gardens and avenues.

Two other trees which fail to display any pronounced autumn colours are the wych elm and the tree of heaven or Chinese sumach. The latter, having large leaves (p. 414), is peculiar in that the leaflets are shed first and the long stalks follow, so that during October the ground around the tree is strewn with leaf-stalks sometimes as much as two feet long.

One of the first trees really to greet autumn with a blaze of colour is the lime. It presents a goodly show of golden tints.

Other trees which turn early in the autumn include the poplars and the birches. The birches are exceptionally striking, turning a bright yellow and presenting the effect of thousands of yellow coins tumbling from the trees which originally bore them.

The walnut, too, is early; but its colour change is nondescript, though sometimes its leaves turn a bright yellow.

Early in the month also the horse-chestnut turns brown or dull gold.

Later in the month, other trees begin to present yellow and gold autumn tints. These include the tulip tree, most species of willow, hornbeam, hazel, common elm, sweet chestnut, and field maple. Some of these

trees are cultivated especially for their striking yellows and golds during autumn. The cultivated varieties of hazel, for example, especially, *C. avellana* var. *aurea*, present a beautiful gold. (There is another variety, *C. avellana* var. *purpurea*, which is purple throughout the foliar season.) Then there are species and varieties of maple which display brilliant tones throughout the year. Others do not become conspicuous until autumn.

The London plane is dull during autumn for its leaves merely turn to a subdued shade of greenish-yellow. The elder turns greenish-yellow, though sometimes it is almost bright yellow in colour.

Among those trees which turn brown or dull red are the wild service, whose leaves are spotted with brown; white beam, whose leaves are spotted with red; hawthorn — red; common oaks — dull brown (and these dead leaves frequently remain on the tree throughout the winter); and guelder rose.

Among the stars in the autumnal show are the rowan or mountain ash whose leaves turn a fiery red; certain cultivated exotic oaks such as *Quercus coccinea*, which remain red well into the winter; beech, whose leaves, like those of the oaks, frequently persist on the tree throughout the winter; spindle, the leaves of which vie with the plant's brightly coloured fruits (p. 574) in hues of yellow, pink and red; dogwood, whose bright orange and red tints render the plant very conspicuous in the autumn hedgerow; and the wayfaring tree — yellow and pink.

The alder is late in everything, and so its leaves remain unperturbed longer than those of most other deciduous trees. They eventually turn a dull yellow.

The two deciduous coniferous trees, namely, larch (*Larix europaea* or *decidua*) and the rare exotic deciduous cypress (*Taxodium distichum*), differ in that the former presents no spectacular autumnal display whereas the latter turns an impressive red before shedding its leaves.

LEAF-FALL

Now, towards the end of October, the work of the deciduous leaf is done, and it is discarded. Most long-lived perennials in Britain are shrubs, bushes or trees, and, apart from conifers, they are deciduous. In tropical regions, on the other hand, the majority are evergreen. The reason for this is not far to seek. Temperate regions experience two definite seasons during the year — summer and winter. The winter season is not conducive to good growth since the various factors which condition plant life processes — temperature, light intensity, day-length, and so on — are at their lowest ebb. So, during the interim season of autumn, plants prepare for their winter 'sleep'. Some, like bulbous plants, hibernate beneath the soil; others, like deciduous trees, discard their leaves, their sap ceases to rise, and all processes are reduced to a minimum — some to zero.

THE FLORAL YEAR

(Conifers, most of which are evergreen, are specially adapted to winter conditions; but even these are more active, especially in their reproductive processes, during the warmer spring and summer months.)

But ah! the leaves of summer that lie on the ground!
What havoc! The laughing timbrels of June,
That curtained the birds' cradles, and screened their song,
That sheltered the cooing doves at noon,
Of airy fans the delicate throng,—
Torn and scattered around:
Far out afield they lie,
In the watery furrows die,
In grassy pools of the flood they sink and drown,
Green-golden, orange, vermilion, golden and brown,
The high year's flaunting crown
Shattered and trampled down.

Shorter Poems: R. BRIDGES

The mechanism of leaf-fall is not a haphazard affair; certain growth processes occur which ensure that the leaf is completely severed, and the wound protected even before it is exposed. Across the whole of the leaf-base certain cells begin to change their shape, tear away from each other, and become spherical. The layer which does this is several cells thick.



LEAF-FALL IN A BEECH WOOD

Harold Bastin

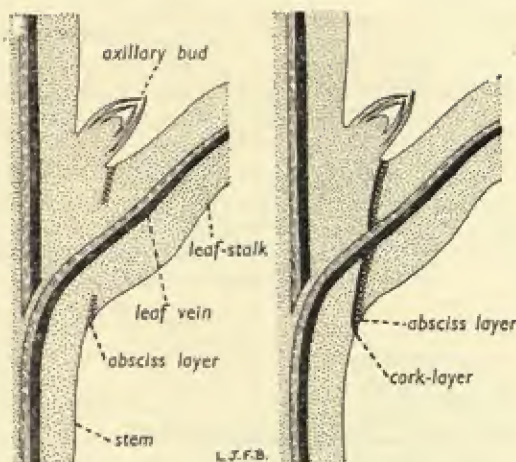
The rounding-off process begins in the outer tissues of the leaf-base and gradually works its way across it. Naturally, by this time all the cells in a complete cross-section of the leaf-base have done this, that area is no longer firmly knit together and there is, therefore, nothing on which the leaf itself may hold. So, by virtue of its own weight, sometimes also stimulated by a high wind, it falls off.

But this rounding-off process is not the only one which takes place. If it were, it would mean that at the node where the leaf had

been there would be left an open wound of thin, living cells exposed to rain and disease-bearing bacteria and fungi. This is circumvented by a process which takes place simultaneously with the development of the layer already described. This layer of rounded cells causes the actual abscission and is therefore known as the absciss layer. While the cells of the absciss layer are being rounded-off, the layer of cells beneath them begins to form cork. This cork formation goes on at such a rate that by the time the absciss layer is complete and the leaf shed, the cork layer, as it is called, is also complete. So when the leaf falls, the wound is already protected by an impervious layer of cork. This cork area forms the leaf-scar (p. 9), having marks on it left by the veins which passed through the original leaf-base into the leaf. Such leaf-scars are sometimes diagnostic of the species (see Chapter 5).

They will come again, the leaf and the flower, to arise
From squalor of rottenness into the old splendour,
And magical scents to a wondering memory bring ;
The same glory, to shine upon different eyes.
Earth cares for her own ruins, naught for ours.
Nothing is certain, only the certain spring.

The Burning of the Leaves : LAURENCE BINYON



SECTIONS THROUGH LEAF-BASES AND AXILS DURING THE FORMATION OF CORK AND ABSCESS LAYERS

Left, early stage ; right, late stage

FLOWERS WHICH MAY APPEAR DURING OCTOBER

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EVERGREENS

Sad mists have hid the sun, the land is forlorn :
 The plough is afield, the hunter windeth his horn.
 Dame Prudence looketh well to her winter stores,
 And many a wise man finds his pleasure indoors.

The Months : R. BRIDGES

AS October is waning and November looms ahead, earth's mantle becomes more uniform in colour, for the flowers have mostly faded, the deciduous plants have shed their leaves, and all that is left is the sober sameness of dull brownness blotched on a mantle now green. But even this greenness has many shades, presented mainly by the evergreens which now stand out more than ever.

Evergreens are those plants which habitually do not shed their leaves in winter. They do not form a botanically 'natural' group, though the members of some plant families (for example, ERICACEAE) contain a higher percentage of evergreens than do others. It must not be thought, however, that because a plant is evergreen therefore it never sheds its leaves. No perennial plant retains the same leaves throughout its life-history: it is slowly but continuously shedding the older leaves and producing new ones, though it never sheds all its leaves at the same time as do the deciduous plants in autumn. Furthermore, some plants may be said to be partially evergreen or semi-evergreen in that although they are never quite leafless they bear more leaves during the growing seasons of spring and summer than they do during winter. Privet is a case in point. During the summer this plant is so thick with leaves that it is difficult to see through a privet hedge, whereas, although the same hedge is still green with leaves during the winter months there are not so many, so that it is possible to see through the hedge easily. The bramble is also a semi-evergreen.

Not many herbs are truly evergreen, though frequently some of them carry their leaves over the winter season. But this is not always so, therefore such plants cannot with justification be called evergreen.

The small wintergreen and its close generic relatives are true evergreen herbs. So also are the periwinkles, and many perennial grasses and sedges. It is, of course, the perennial grasses which contribute the lion's share to earth's winter green mantle.

Evergreen trees are very conspicuous during the winter, though, apart from the conifers, only a few are really evergreen. Among the angiosperms are the holly, sweet bay or true laurel, Japanese laurel, box

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and strawberry tree. Most of the wild forms of these trees have already been described during their flowering season.

All coniferous trees which grow in Britain — indigenous and exotic — are evergreen, with the exception of the larch (*Larix europaea* or *decidua*) and the marsh, swamp, bald, or deciduous cypress (*Taxodium distichum*). Conifers, at this time of the year therefore, especially when growing massed in plantations grouped in isolation like the Scots pine (*Pinus sylvestris*), are very much in evidence. And the different shades of green which they present are most pronounced. There are, for example, the deep green of the Scots pine, the even deeper green of the yew (*Taxus baccata*), the dark green of the sinister, ugly monkey's puzzle (*Araucaria imbricata*) whose leaves last about fifteen years before turning brown, the glaucous blue-green of the cedar of Lebanon (*Cedrus libani*) and other cedars, the lighter greens of the 'Christmas tree', that is the common or Norway spruce (*Picea abies*) and other spruces, and firs, and so forth.

Among the evergreen angiospermous shrubs are the interesting spurge laurel and mezereon, the heaths and heathers, the mistletoe and last, but not least, the ivy. This last-named plant is of particular interest during October and early November for it is just beginning to bloom.

Before examining the ivy it will be of interest to note the special characters most evergreens have, which enable them to withstand the inclemencies of winter despite the presence of their leaves. Most of them have special adaptations for protecting their pores (stomata, p. 12) against high winds, thus reducing excessive loss of water and gaseous interchange. In the cross-leaved heath, for example, the pores are on the under-surface, but the leaf is folded so that the pores are enclosed in a partially opened groove. All the conifers have needle-shaped leaves, so the leaf area exposed is reduced to a minimum. Furthermore, the pores are sunken in deep pits. Most evergreen leaves, such as ivy and holly, are very thick and leathery, for their surfaces are covered with a specially thick cuticle through which little water can pass and in which the pores are deeply seated.

IVY

Ivy is a very common plant — so common that there surely is no-one who could not recognise it instantly; yet there is much to learn about it. How many, for example, know that it is about the last of the British plants to bloom. It begins doing so towards the end of October and is in full bloom in early November.

Ivy belongs to the family ARALIACEAE (Dicot.) which is composed mainly of tropical twiners, though the ivy itself is not a twiner but a root climber. It is a member of the genus *Hedera* — a small genus; and the plant has been assigned the name *H. helix*. The generic name is the Latin for ivy and the specific name is the Greek for spiral.

Ivy is a root climber, giving off adventitious roots almost wherever the stem comes into contact with a support — no matter whether it be of stone or wood. Thus does the plant go on growing and spreading, covering entire buildings unless checked, and sometimes almost choking the unwilling tree which happens to be its victim. From the substratum of wood or stone, the roots are able to absorb water and above all obtain support for the almost interminably long, straggling branches.

. . . and a deep radiance lay
Full on the ancient ivy, which usurps
Those fronting elms, and now, with
blackest mass
Makes their dark branches gleam a
lighter hue.

The Lime-Tree Bower my Prison :
COLERIDGE

By old blanched fibres of gaunt ivy
bound,
The hollow crag towers under noon's
blue height.

Mother and Child :
LAURENCE BINYON

In the shape of its leaves, ivy is one of the most variable of plants. In some cases the leaf is quite lance-shaped; but more frequently it is heart-shaped or palmate with five pronounced lobes; and then there is every gradation between these two extremes. Quite a large number of different forms may be found on the same plant. Here there seems to be a fruitful field for research, for so far as I am aware, not a great deal of attention has been paid to this phenomenon by botanists. The reason for such heterogeneity in leaf-form on one plant seems, from observation, to



IVY CLIMBING BY MEANS OF
ADVENTITIOUS ROOTS

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be mainly physiological. Where the ivy branch is closely adpressed to a flat support such as a wooden paling or wall (and especially if facing the sun) then the leaves are conspicuously lobed. If the branches are growing upright away from the support, then the leaves tend towards a heart-shape. Those leaves of the branches trailing on the open ground and in hedge-banks are also usually quite well lobed and arranged in such an efficient mosaic that each leaf gets the maximum of sunlight. Furthermore, ivy trailing among the undergrowth of woods usually bears enormous leaves which are heart-shaped. It seems, therefore, if the incidence of the light is entirely unilateral, that is, comes from one direction only, and especially if the leaf is exposed to bright, unilateral light, then the foliar lobes are pronounced. On the other hand, if the leaf is exposed to subdued light, and if growing upright or oblique and not against a support, then the heart-shape is predominant. Like those of most angiospermous evergreens, the leaves are tough, thick and glossy, with pronounced veins.

Wasps and flies are still active during October and early November, so the nectar — freely exposed — of the ivy flower must be welcome now, for there is little else. The flowers are borne on pronounced stalks — about a dozen coming off at one point. The clusters of flowers are usually borne on the upright branches having heart-shaped leaves. The



IVY IN FLOWER

Inset, single flower

SEPTEMBER TO DECEMBER

flower is greenish, having five joined sepals, five petals and five to ten stamens. The ovary is composed of five fused carpels with five joined styles. The fruit is a black berry which, though relished by birds, is poisonous to man.

Most evergreens have become immortalised in folk-lore, and the ivy is no exception. It has also figured largely in art — mainly because of its handsome foliage. The plant is dedicated to Bacchus because it is supposed to have protected him (when an infant) against his step-mother Hera. In art, Bacchus is frequently garlanded with ivy. This plant was supposed to be a protection against drunkenness, to such an extent that if wine were sipped out of a cup made of ivy wood then there was no fear of becoming intoxicated. At one time, an ivy bush was used as a sign of a tavern, which perhaps explains Shakespeare's comment :

If it be true that good wine needs no bush, 'tis true that a good play needs no epilogue ; yet to good wine they do use good bushes, and good plays prove the better by the help of good epilogues.—*As You Like It*, Act V, Sc. 4 : SHAKESPEARE

In Christian art, ivy symbolises everlasting life, perhaps because of its 'everlasting' habit. At one time, however, it was used for binding graves, so maybe for that reason alone it should not be used on festive occasions.

Oh ! how could Fancy crown with thee,
In ancient days, the God of Wine,
And bid thee at the banquet be
Companion of the Vine?
Ivy ! thy home is where each sound
Of revelry hath long been o'er ;
Where song and beaker once went round,
But now are known no more.

Ivy Song : FELICIA D. HEMANS

NOVEMBER

With the ivy we must wish 'good-bye' to all flowers this year. November is upon us, and though some flowers are still blooming, they are only those which began earlier on and have withstood the exacting weather conditions which we must expect at this time of year.

November is the ninth month of the Roman calendar. The Anglo-Saxon names for the month were *Windmonath*, wind month, and *Blotmonath*, blood month, since at this time of year cattle were killed for sacrifice and use during the winter.

Nought have I to bring,
Tramping a-chill and shivering,
Except these pine-cones for a blaze,—

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Except a fog which follows,
And stuffs up all the hollows,—
Except a hoar frost here and there, —
Except some shooting stars
Which dart their luminous cars
Trackless and noiseless through the keen night air.
The earth lies fast asleep, grown tired
Of all that's high or deep ;
There's nought desired and nought required
Save a sleep.

The Months : A Pageant : CHRISTINA ROSSETTI

OTHER FLOWERS WHICH MAY APPEAR DURING NOVEMBER

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Shepherd's purse, 95
Woundwort, Corn, 180
Woundwort, Field, 180
Yarrow, 441

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CHRISTMAS

But now 'tis Winter, child,
And bitter northwinds blow,
The ways are wet and wild,
The land is laid with snow.

The Idle Flowers : R. BRIDGES

DECEMBER offers little to the botanist outdoors — that is, if he is especially interested in flowers, for, apart from groundsel and gorse, and perhaps a few other hardy plants, nothing blooms at this time of year.

December is the twelfth and last month of the year ; in the Roman calendar it was the tenth, which also was the last, for that calendar was divided into ten months only. The Anglo-Saxons called it the *Winter-monath*, for obvious reasons ; but they also referred to it as *Helighmonath*, holy month, referring of course to Christmas. To the Germans, Christmas Day is *Christtag*, and therefore December is *Christmonat*.

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December is an indoor month; but even here, amid Christmas festivities, the botanist will find much that is interesting, for certain plants and the products of some others contribute in no mean measure to the traditional Christmas celebrations.

December came, with mirth men needs must make
E'en for the empty days and leisure's sake
That earth's cold leaden sleep doth bring; so there
Our elders sat within the guest-hall fair,
Not looking older for the snow without.
Cheery enough.

The Earthly Paradise: WILLIAM MORRIS

As Washington Irving wrote in his *Old Christmas*:

There is something in the very season of the year that gives a charm to the festivity of Christmas. At other times we derive a great portion of our pleasures from the mere beauties of nature. Our feelings sally forth and dissipate themselves over the sunny landscape, and we "live abroad and everywhere". The song of the bird, the murmur of the stream, the breathing fragrance of spring, the soft voluptuousness of summer, the golden pomp of autumn; earth with its mantle of refreshing greens, and heaven with its deep delicious blues and its cloudy magnificence, all fill us with mute but exquisite delight, and we revel in the luxury of the mere sensation. . . . The English, from the great prevalence of rural habits throughout every class of society, have always been fond of those festivals and holidays which agreeably interrupt the stillness of country life. . . . Even the poorest cottage welcomed the festive season with green decorations of bay and holly.

And here Christmas is upon us, so now for a time of feasting and festival.

I pray thee don thy jerkin of olden time,
Bring us good ice, and silver the trees with rime;
And I will good cheer, good music and wine bestow,
When the Christmas guest comes galloping over the snow.

The Months: R. BRIDGES

During Christmas festivities, both secular and holy, certain plants play important parts, though it is wrong to assume that all Christmas customs have a Christian origin. Indeed some of them date back to ages far before the Christian Era. The use of evergreens, for example, has been carried over into this Era from times pagan. The Christian Church, as it developed in strength, not only frowned upon certain pagan customs and had them eliminated (sometimes after much long-drawn-out argument), but it also blessed others and took them as its own. For example, the influence of the ancient Roman *Saturnalian* customs is still with us, for during *Saturnalia* (the most important day of which was December 17) the Romans decorated their halls and homes with lights and festoons of evergreen. The chief evergreen then used was the true laurel or sweet bay (*Laurus nobilis*) — the laurel of victors and conquerors.¹

¹ *Trees in Britain*, by L. J. F. Brimble, p. 145.

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The bay leaf is aromatic, and that is why it is frequently used as an ingredient of soups, stews and other meat dishes. It is still used for indoor decoration at Christmas time and nowhere so picturesquely as at Queen's College, Oxford, during the bringing in of the boar's head. Then a carol is sung, the first verse of which is :

The boar's head in hand bear I
Bedeck'd with bays and rosemary ;
And I pray you, my masters, be merry,
Quot estis in convivio.
Caput apri defero
Reddens laudes Domino.

The origins of the use of the even more popular holly, mistletoe and Christmas Tree are interesting, though none can be said to be truly Christian.

HOLLY

Most people in Britain and elsewhere try to have a few sprigs of holly about the house at Christmas time. The plant is described on page 200, for the flowers appear during May to August. Most forms of holly bear red fruits which are not true berries but drupes, each containing one to six seeds. There are rarer forms which bear either yellow or nearly black fruits.

'Tis a brave tree. While round its boughs in vain
The warring wind of January bites and girds,
It holds the clusters of its crimson grain,
A winter pasture for the shivering birds.
Oh, patient holly, that the children love,
No need for thee of smooth blue skies above ;
Oh, green strong holly, shine amid the frost ;
Thou dost not lose one leaf for sunshine lost.

The Holly: AUGUSTA WEBSTER

Holly (*Ilex aquifolium*) was used for decoration during ancient Greek and Roman festivals. The old Teutons valued it as a protection against evil spirits. It is also used at Parsee baptisms. Some say that Balder was standing by a holly tree when he was slain by the mistletoe (p. 599), and that his blood was turned into holly fruits while the tears of his wife Nanna became transformed into mistletoe fruits.

As a Christmas decoration it dates back to the beginning of Christianity itself.

Red berries shine here and there in the lattices of Minor Canon Corner ; Mr. and Mrs. Tope are daintily sticking sprigs of holly into the carvings and sconces of the cathedral walls, as if they were sticking them into the coat button-holes of the Dean and Chapter.—*Edwin Drood* : DICKENS

SEPTEMBER TO DECEMBER

Since holly has held such a special place in man's esteem for so long, it is not surprising that many superstitions and legends have grown around it. In North European countries it is known as Christ's Thorn, and one old legend claims that the Crown of Thorns was made of holly, and that the fruits were stained by the blood of Christ. The earlier Christians called holly the Righteous Branch. Later superstitions are legion. For example, in some parts of the country it is considered unlucky to bring holly into the house before Christmas Eve and equally unlucky to take it down again before, or leave it up after, Old Christmas Day (January 6). In other parts spiny holly is referred to as 'he' and the smooth form as 'she': whichever kind is used in the home at Christmas-time indicates whether the husband or wife shall rule the family during the ensuing year. Some folk believe it is unlucky to throw holly away, so they burn it; this belief might be remotely associated with the festive fires of former days. If a sprig of holly in the house falls down, that is an ill omen.

In the days when ivy was also used for household decoration (p. 593) it was looked upon as a woman's plant, whereas the holly belonged to the man. E. Rickert in his *Ancient English Carols* gives a fifteenth-century carol exemplifying this. The following is an excerpt:

Holly and Ivy made a great party,
Who should have the mastery.
In landès where they go.

Then spake Holly, "I am free and jolly,
I will have the mastery,
In landès where we go."

Then spake Ivy, "I am lov'd and prov'd,
And I will have the mastery,
In landès where we go."

MISTLETOE

Forth to the wood did merry-men go
To gather in the mistletoe.

SIR WALTER SCOTT

According to Sir James Frazer, the mistletoe (*Viscum album*, p. 420) is the 'Golden Bough' of countless legends. The semi-parasitic habit of the plant, which after all is rare among plants, has no doubt inspired many of these legends (most of them of pagan origin). Owing to its past heathen associations in legend, myth and folk-lore, there is even today an ecclesiastical taboo on mistletoe so that its use in places of Christian worship is still frowned upon, though Clement Miles has stated that at

THE FLORAL TEAR

one time mistletoe was placed upon the altar of York Minster. In this connexion, Washington Irving's experience at church on Christmas Day, described in his *Old Christmas*, is of interest :

On reaching the church-porch, we found the parson rebuking the grey-headed sexton for having used mistletoe among the greens with which the church was decorated. It was, he observed, an unholy plant, profaned by having been used by the Druids in their mystic ceremonies ; and though it might be innocently employed in the festive ornamenting of halls and kitchens, yet it had been deemed by the Fathers of the Church as unhallowed, and totally unfit for sacred purposes. So tenacious was he on this point, that the poor sexton was obliged to strip down a great part of the humble trophies of his taste, before the parson would consent to enter upon the service of the day.

Among the Celtic Druids, nothing was venerated more than the mistletoe and the oak upon which it mainly grew (p. 120). Indeed, according to most authorities, the name Druid means 'oak men'. They believed that the mistletoe (being rather rare) was sent by the gods ; and they gathered it on certain festive occasions with great pomp and solemnity. Some believed that during the winter months, the spirit of the oak tree host passed into the mistletoe parasite where it enjoyed evergreen protection until the host had once more donned its own green foliage. To



Robert M. Adam

MISTLETOE IN FRUIT

the Druids the mistletoe was an almost universal healer. Furthermore, it rendered fertile animals (even women) which had hitherto proved to be barren. But all these beliefs were conditional. For example, to be effective the mistletoe must never be allowed to touch the ground, neither must it be cut by anything made of iron; so the Druid priest used a sickle of gold and allowed the severed sprays to fall into a white cloth. The ancient Italians held similar beliefs to these; so also do the Ainu, the remnants of a Neolithic Japanese race of peoples. Mistletoe even made the earth itself more fertile, and to this end the leaves were powdered and scattered over the land.

In some parts of ancient Europe (in countries so far apart as Italy and Sweden) the mistletoe was also believed to be an effective fire extinguisher and preventive. So sprays of it were hung up in homes as a protection against fire. In Switzerland, Bohemia and elsewhere it was also a means of protection against lightning and thunderbolts — apparently a universal healer and defence minister.

Perhaps the most picturesque myth embodying the mistletoe is the old Norse legend of the god Balder. Balder the Beautiful dreamt dreams foreboding his death, so he went to his mother, Frigg, for advice, whereupon she solicited and obtained an oath from everything on earth — birds and beasts, plants, metals, stones, sicknesses, and so forth — never to hurt Balder. So from then onwards Balder was apparently safe and invulnerable against attacks from even the strangest weapons. All the other gods, except the mischief-making Loki, rejoiced at this, for they all loved Balder, and they amused themselves by throwing sticks and stones, staves and spears at Balder, who now basked in divine protection. But the jealous Loki was not to be outdone, so, in the guise of an old hag, he visited Frigg and learned from her confidentially that the only thing which had not given the oath was the plant called mistletoe, for it was too young to swear and take on such a responsibility. So off went Loki to gather some of the innocent plant. Then he went to the blind god Hother asking him why he did not join the other gods in their games with Balder. But Hother pleaded that he was blind and therefore could not take effective aim. So Loki promised to find him a weapon and guide his hand. Alas, the mistletoe stave struck home, and because it had made no promise to Frigg, it pierced Balder's heart who, much to the consternation of all around, fell dead.

So on the floor lay Balder dead; and round
Lay thickly strewn swords, axes, darts and spears,
Which all the Gods in sport had idly thrown
At Balder, whom no weapon pierced or clove;
But in his breast stood fixed the fatal bough
Of Mistletoe, which Lok the Accuser gave
To Hoder, and unwitting Hoder threw—
'Gainst that alone had Balder's life no charm.

Balder Dead: MATTHEW ARNOLD

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Then the gods took the body and placed it in Balder's ship, *Ringhorn*. Meanwhile, Balder's wife, Nanna, had died of grief, so her body also was placed in the ship which was then set on fire and driven out to sea. (Some say that Balder's blood turned to holly fruits and Nanna's tears to mistletoe fruits (p. 596).)

So today, mistletoe should not be allowed to touch the ground or be put in a vase — it should hang suspended where it can do no harm and beneath it men and women can meet to bestow on each other the kiss of peace. As each couple kisses, the man should pick off one of the mistletoe fruits, and when they have all gone the privilege ends.

The so-called mistletoe 'berries' are not true berries, for the white sticky flesh is really a swollen part of the floral receptacle (p. 121).

THE CHRISTMAS TREE

And now the fir tree . . .
Acclaimed by eager, blue-eyed girls and boys,
Bursts into a tinsel of fruit and glittering toys,
And turns into a pyramid of light.

EUGENE LEE-HAMILTON

The Christmas Tree which now figures so largely in Christmas festivals is one of the spruce firs (ABIETACEAE). It is the Norway or common spruce (*Picea abies*) — a tree which is figuring largely in present-day afforestation programmes. It belongs to the Gymnosperms which are not being dealt with in this book. A full account of the botany of this tree will be found in *Trees in Britain*, pp. 89-94.

The tree is pyramidal in shape since it has an erect trunk and bears its branches in whorls with the youngest at the top. The needle-like leaves are about an inch long and are borne on the stalks in a spiral fashion, but most of them are curiously twisted so that they fall into a more or less horizontal plane. The male and female flowers are borne on the previous year's shoots — the male in ones, twos or threes, and the female in erect cones. The ripe cones, that is, the female cones which have been fertilised, are made up of loosely packed, thin, brown, overlapping scales. The seeds ripen about a year after the flowers have been first formed. Each scale of the cone subtends two winged seeds,¹ and when ripe each seed is shed and disseminated by the wind. This has usually already happened by Christmas, so it is unlikely at this time that there will be any ripe seeds present in those cones which might be still on the tree. The old cones remain on the tree for several years after the seeds have gone; eventually they drop off.

The origin of the use of the Christmas Tree is lost in obscurity. It seems that the choice of the common spruce tree is of Teutonic origin,

¹ *Trees in Britain*, p. 40.



CHRISTMAS FESTIVE PLANTS

Christmas tree (Norway or common spruce) bearing an almost ripe cone (*inset*, winged seed) ; mistletoe (*inset*, section of fruit) ; holly (*inset*, section of fruit)

THE FLORAL YEAR

however, though it is probable that the Germans were really adopting in a modified form the old Roman practice of using evergreens at their *Saturnalian* and other festivals. For centuries past the Germans and other European peoples, especially the Scandinavians, have used trees — oak spruces, pines, etc. — at their various feasts.

The first recorded use of the common spruce as a Christmas Tree in Germany dates back to the seventeenth century; but then it was neither widespread nor popular. Indeed the practice did not spread even in Germany until the nineteenth century. Then everybody — rich and poor — had a Christmas Tree. No wonder, therefore, so many legends have cropped up in that country since that time. The following example is quoted from *Trees in Britain*. A forester and his family were sitting around their fire one wild winter night when a knock came on the door. When the peasant answered it he was surprised to find a child, shivering with the cold, tired out and hungry. The man took the child in, and decided to keep him there for the night. His wife gave the child some warm milk, and when the question of a bed for him arose, Hans, the peasant's son gave up his own and he himself slept on the floor. In the morning the peasant awoke to glorious singing outside as if his cottage was surrounded by some celestial choir. Then he looked at his little visitor and saw his face was dazzling in its brightness. It was the Christ-Child himself. As the Child departed from the cottage He tore a bough from a near-by fir tree and planted it firmly in the ground, telling the peasant that for his kindness the tree would always bring him abundance in the depths of winter.

So, therefore, the Christmas Tree should always be a thing of beauty: legend has given it a religious symbolism, and no gifts of purely utilitarian value should hang from it — only those which are beautiful and give delight to the eye. The 'useful' presents should be relegated to the base of the tree — a practice followed in German homes for many years. As Mrs. Alfred Sidgwick wrote in her *Home Life in Germany*:

In every home . . . one of the trees that scented the open air a week ago is shining now with lights and little gilded nuts and apples, and is helping to make that Christmas smell, all compact of the pine forest, wax candles, cakes and painted toys, you must associate so long as you live with Christmas in Germany.

Even in the streets of many towns Christmas Trees were erected and illuminated. In London, the Christmas Tree inside St. Paul's Cathedral, and the two Christmas Trees on the steps of St. Martin-in-the-Field are familiar to thousands. In 1947, the people of Oslo presented an enormous Christmas Tree to the people of London, and this stood, decorated and illuminated, in Trafalgar Square. This happy idea is being repeated. In the New World of today people often place their Christmas Trees outdoors so that their illuminated brightness gives a festive air and aura

of welcome to all visitors. In Germany, trees are frequently set up in churches and sometimes even over the graves of the departed.

The Princess Helene of Mecklenburg introduced the Christmas Tree into Paris in 1840, and after about fifty years the French had taken the custom entirely to their hearts. Though it is recorded in Greville's *Diary* that Princess Lieven had introduced the Christmas Tree into Britain, it was not until the same time as its introduction into Paris by Princess Helene that the fashion became established here, for then Queen Victoria and Prince Albert for the first time set one up at Windsor.

MORE CHRISTMAS BOTANY

Certain other plants figure in Christmas lore and legend, and there are some plant products which are of especial significance at Christmas-time.

Rosemary (*Rosemarinus officinalis*) of the family LABIATAE, Dicot., though not a native of Britain, is cultivated as a pot-herb. Sprays of it were at one time used for Christmas decoration (p. 596). It is, of course, the emblem of remembrance.

There's rosemary, that's for remembrance; pray, love, remember: and there is pansies, that's for thoughts. . . . There's fennel for you, and columbines: there's rue for you; and here's some for me: we may call it herb-grace o' Sundays; O, you must wear your rue with a difference. There's a daisy: I would give you some violets, but they withered all when my father died. . . .

Hamlet, Act IV, Sc. 5: SHAKESPEARE

Then there are the many fruits which are so popular at Christmas-time; but space will not allow our considering these, though it is of interest to note that the muscatel and such ingredients of the Christmas pudding as currants, raisins and sultanas are all different varieties of the grape (*Vitis vinifera*). The sultana is a seedless variety, and the dried currant is in no way related to the black and red currants which we grow in Britain. All these dried grapes are cultivated in eastern Mediterranean countries and in South Africa and Australia.

The wassail bowl has all but disappeared from our ken. But at one time it was very popular at Christmas-time. It was a complicated concoction made up entirely of plant products. The basis was either ale or wine. In this was put nutmeg, sugar, toasted bread, ginger and roasted crab-apples. The nutmeg is the hard seed from the berry of the nutmeg plant (*Myristica fragrans*) of the family MYRISTICACEAE, Dicot. This plant is a tropical one and is cultivated in the Indian Archipelago and elsewhere. Ginger is the dried tuberous underground stems of the ginger plant (*Zingiber officinale*) of the family ZINGIBERACEAE, Monocot. It also is a tropical plant. The liquor thus produced for the wassail bowl was called lamb's wool.

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Next crowne the bowle full
With gentle Lambs' Wool,
Add sugar, nutmeg and ginger,
With store of ale too ;
And thus ye must doe
To make the Wassaile a swinger.

Twelfth Night: HERRICK

And having recently read Ethel Armitage's *Flower and Leaf*, I recall her touching reference there to the Christmas rose (*Helleborus nigra*), which is not a member of the rose family (ROSACEAE, Dicot.), but of the buttercup family (RANUNCULACEAE, Dicot., p. 115). Miss Armitage wrote her excellent little book during the Second World War when food was not too plentiful: her entry for Christmas Day is worth quoting:

25th.—We had our bunch of fresh flowers for Christmas. Our decorations consisted of a few Christmas roses, a little splashed by recent rain, mixed with some blooms of winter heliotrope.

We thought evergreens would be a little out of place; for they seem to denote feasting and merrymaking, to which, just yet, we have neither the right nor the inclination.

The fresh flowers, we like to believe, stand for new hopes, and fresh beginnings; something young and vigorous; something moving onward; a symbol of this new world so glibly talked about, but which will be so very difficult to achieve and towards which we can make but the feeblest gestures.

The Christmas rose is not a wild plant in Britain. Its large white flowers turn greenish after fertilisation (p. 115). It is sometimes known as Christ's herb, for legend has it that a shepherd girl wept because she had no gift for the Holy Child, so an angel appeared and brushing away the fallen snow exposed to view the white Christmas roses which made the perfect gift. Another legend claims that the Christmas rose grew and bloomed on the very first Christmas night: and according to a further legend the Christmas rose first bloomed in heaven and the angels obtained permission to bring it to earth to comfort the unhappy pair who had just been evicted from the Garden of Eden.

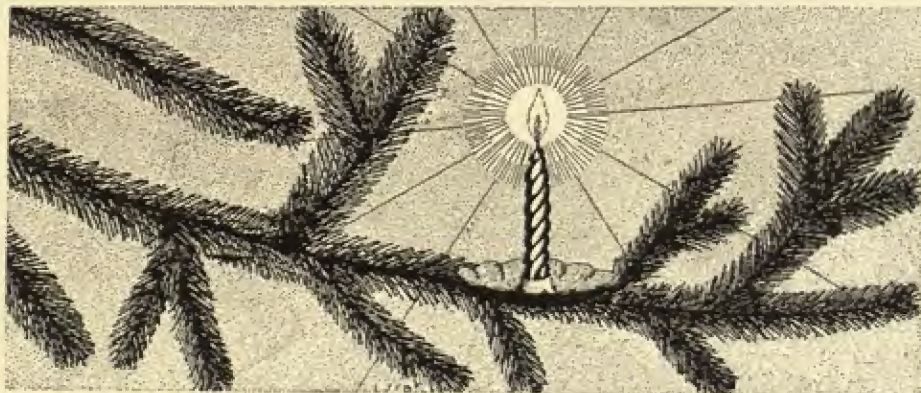
But Winter holds a gem within its folds,
The brightest diamond in the darkest mine,
Christmas! Yet some will say it also holds
Another jewel in the shortest day.
Oh then we look for lengthening; we look
(Knowing full well that mornings are as dark,)
For that blest moment when, surprised, we say
"It is still light!" and take our torchless way.

The Garden: V. SACKVILLE-WEST

And so with Christmas Day we close our year with the flowers. Still a few, such as shepherd's purse, groundsel, gorse and white deadnettle may be seen bravely blooming.

SEPTEMBER TO DECEMBER

It has been impossible to do them justice in one short year of study; but it is hoped that enough has been written to inspire many to delve deeper into the charms which Flora offers and to study more closely the fascinating science of field botany. Those so inspired will have much to look forward to in the coming New Year.



So there's my year, the twelvemonth duly told.

Harvest: EDMUND BLUNDEN

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